SYLLABUS FALL SEMESTER 2011
Math 2020
Wednesday 5:15 – 7:45 pm
MATH FOR ELEMENTARY TEACHERS II

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Office Hours:	By appointment

Required Text: *Mathematics for Elementary Teachers A Contemporary Approach by* Gary L. Musser, William F. Burger, Blake E. Peterson Cost: Approximately $110.00. You also need to purchase a student manipulative kit. The kit is for pre-service teachers and will be helpful during practicum and student teaching. The book and kit are used for the entire 2010/2020 series. There is a student solution manual that is helpful. Another useful resource is *Math On Call* by Great Source (approximately $18.00).

Class Description: This class is the second of a two-semester sequence in mathematics that is appropriate to the needs of elementary and middle school teachers. Topics include: problem solving, sets, numeration systems, whole numbers, algorithms of arithmetic, number theory, rational numbers, geometry, algebra, and decimals. Both classes in the sequence are required for prospective elementary school teachers.

Class Prerequisites: Math 1050/1050E, or the equivalent. **As of Spring 2003, you must earn a C or better in Math 2010 in order to take Math 2020.**

Class Purpose: This class is not designed to teach you fundamental skills in elementary math; it presumes prior competency in 'doing' grade-school math. Rather, this class examines the theory (the 'why') behind the 'how' of elementary math. The content and processes of mathematics will be presented in a logically sound approach in order to help you:
1. Learn to view mathematics as fascinating and stimulating activity that provides skills, insights, and modes of thinking that are essential to modern life.
2. Become a more confident problem solver, who is able to think critically and creatively in a variety of quantitative, spatial and logical situations.

3.   Become a more accomplished communicator with a capacity to construct well-reasoned explanations of mathematical algorithms.

4.   See the connections between mathematics and other subjects in real-world applications.

5.   Learn the foundations necessary to build adequate instructional opportunities for mathematical students across grades K-8.

Class Objectives: All mathematics classes at Dixie College will:

1.   Require students to perform mathematical processes including fractions, percentages, decimals, proportions/ratios, algebraic equations, and/or calculus techniques.

2.   Provide students with application problems that use a variety of methods including arithmetical, algebraic, and geometric methods.

3.   Challenge students to make inferences from mathematical models that include formulas, graphs, and tables.

4.   Provide students with real-life applications that use a variety of mathematical functions.

Upon successful completion of Math 2020, a student will demonstrate, through testing, the ability to:

1.   Identify and apply a sound problem solving process to a variety of mathematical problems.

2.   Describe and apply a variety of problem solving strategies to individual problems.

3.   Identify and apply instructional algorithms to basic arithmetic operations.

4.   Demonstrate elementary arithmetic algorithms using manipulatives that include: mats, strips, units, sets, blocks, and bars.

Policies and Procedures:

1.   **Attendance and participation:** You are expected to attend class and to participate in all the class activities. Tardiness and unexcused absences may result in the loss of points.

2.   **Hours of lectures each week:** 3 hours

3.   **Plagiarism:** You cheat, you fail.

Accommodation for Special Populations: "Proper documentation of a disability is required in order to receive services or accommodations. Any student eligible for and requesting reasonable academic accommodations due to a disability must provide a letter of accommodation to their professor from the Disability Resource Center within the first two weeks of the beginning of classes. Please contact the Center on the main campus to follow through with the documentation process. We are located in the Student Services Center Room #201, or you may call for an appointment and further information regarding the Americans with Disabilities Act (ADA) at 652-7516."

Assessments:

1. Completing **Homework** on each chapter is necessary in order for you to fully explore the subject being discussed. Homework assignments are to be completed by the first class period after they are assigned in the syllabus. Unless otherwise indicated in class, each assignment will be to do the listed problem for each section. **NO LATE WORK WILL BE ACCEPTED.** Homework assignments should be neat and orderly. All answers should be validated with the proper work (i.e., show your work when appropriate). Without supporting work, the assignment will be considered incomplete.

2. You are to keep a **Math Journal**; it will be worth 75 points. Your journal will be in a 3-ring notebook (at least 2") with 5 dividers. The 5 dividers will be labeled: **Articles, Service Tutoring, Homework, Notes/Vocabulary, and Participation/Reflections**. You may choose to have a 6th divider for '**Masters**'. In the **Service Tutoring** section, you will need to have 20 hours of tutoring a student. The object of this is to give you the experience of writing lessons, teaching, making adjustments, etc. You will receive the tutoring form in class. Check with me on teachers that you can help. Tutoring papers should be turned in weekly.

3. There will be **two announced exams** and each will be worth **200 points.**

4. The **final** will be comprehensive (Chapters 9-16) and will be worth **200 points** as well.

5. You will write a 3-5 page paper on your Tutoring experience. You will include the rough draft (signed by someone who will read it for you) and the final copy. This paper should provide research support for the tutoring that you do during the semester. The tutoring that you provide should be based on a sound understanding of mathematical concepts, methods, processes and materials, as well as a basic understanding of student expectations at specific developmental stages. Together with your supervising teacher, you should identify the discrepancies between what is expected of your student(s) and performance level. You will submit a short summary of your student's needs and identify research sources about those needs. A rough draft of your paper should be given to the writing center and stamped. This draft is to be submitted to me with your corrected final copy. It is worth up to 25 points for the fundamental mechanics and organization that is required in professional writing. However, you are responsible for the correctness of your paper. That means you may want to have your

paper looked at more than once by more than one person, otherwise you may still lose points for common problems. **This will be worth 100 points and is due on April 27, 2011.**

6. **The Literature/Math Connection project will include a class presentation (10 minutes)** on math in literature. You will select a children's story/book and use it as the basis of a math lesson. You will provide a written handout for each class member that will include: 1) The book's information, including author's name, ISBN number, and a brief summary. 2) The appropriate age and grade level of the book and your activity 3) The connection to NCTM Standards and Utah Standards 4) Description and purpose of your activity, with appropriate props. An example of this Project will be given to you in class. **Class Presentations will begin on Wednesday, March 23, 2011. DO NOT EXCEED THE TIME LIMIT OF 10 MINUTES OR YOU WILL BE CUT OFF AND YOUR GRADE FOR THE PRESENTATION WILL GO DOWN SIGNIFICANTLY.**

7. The total point distribution will be approximately 1100 points.

<u>Grading Policy:</u>   Grades will be based on the ratio of earned points to possible points. The points are divided into the following categories:

Homework	**50 points**
Professional Articles	**30 points**
(Review of 3 articles that I will give you)	
Journal	**75 points**
Chapter Reflections	**40 points**
Participation/Attendance	**30 points**
Literature Project	**100 points**
Exam 1 (Chapters 9 and 10)	**200 points**
Exam 2 (Chap.11-12)	**200 points**
Exam 3 (Chap.13 - 16	
** and Final)**	**200 points**
Service Tutoring	**200 points**
Service Tutoring Paper	
With Rough Draft	**100 points**

Grade Scale: Grades will be assigned by a total percentage earned divided by the total possible. The usual assignment of grades by percentage is as follows:

100 – 94	A	79 – 77	C+
93 – 90	A-	76 – 74	C
89 – 87	B+	73 – 70	C-
88 – 84	B	69 – 60	D
83 – 80	B-	Below 59	F

(I reserve the right to make changes in this syllabus if I think that such changes will enhance your learning more effectively than the original plan).

Additional Materials needed for Math 2020: colored pencils, scissors, ruler, and glue stick.

SECTION	PART B PROBLEMS
9.1	1, 2, 3, 5, 9, 13, 18, Cube Activity
9.2	1, 20, Wheel of Theodorus
9.3	1, Graph WS, Graph Foldable
10.1	1, 3, 4, Circle Graphs
10.2	1, Box and Whiskers Graph, Mode, Median and Mean Activity
10.3	USA Today Graphs
11.1	11, 16, Jumanji Activity
11.2	6, Fish Sampling Activity,
11.3	1, Three Hat Day,
11.4	10, 11
12.1	1, 2, 4
12.2	1, Pentominoes
12.3	1, Angle Table
12.4	Tessellation Activity
12.5	Prism Activity
13.1	1, 2 a-d, 11
13.2	6, 7
13.3	1
14.1	5
14.2	4, 7
14.3	Worksheet
14.4	Worksheet
15.1	1, 4, 5, 8
15.2	1, 2, 3, 5, 14, 15
15.3	1
16.1	8
16.2	Foldable

Professional Article Review Requirements

You will read 3 Articles that will be given to you in class. For each article review you will:
- ❖ Read the article
- ❖ Make a title page with article title, your name, course name, and date (centered horizontally and vertically)
- ❖ Write a review that:
  - • **Is 1 page**
  - • **Is typed and double-spaced**
  - • **Answers the questions: "What I learned" and "How I'll use this information in my classroom"**

All students will read "Ten Big Math Ideas!" by Marilyn Burns. This article review is **due on Wednesday, August 31, 2011.**

For the second and third articles you will choose **2** from articles distributed during the first class period.

Article Review #2 is **due on Wednesday, September 21, 2011**

Article Review #3 is **due on Wednesday, November 16, 2011.**

You will put each article that you read and review in the 'Article' section of your journal. After I grade your 1 page review for each article, you will also put the review in your journal **after** the appropriate article.

(Note: Each article for Math 2020 was taken from the National Council of Teachers of Mathematics Journals *Mathematics Teaching in the Middle School*).

The following are schools that you can contact to find a math classroom to tutor. Further instructions will be given in class.

SCHOOL	ADDRESS	AREA	PHONE NUMBER
Bloomington	425 Man of War	Bloomington	673-6266
Bloomington Hills	919 E. Brigham Road	Bloomington Hills	674-6495
Dixie Downs	1795 W. 1230 No.	Dixie Downs	673-8978
Panorama	301 North 2200 East	East St. George	628-6881
Red Mountain	263 East 200 South	Ivins	656-3802
Riverside	2500 S Harvest Lane	Washington Fields	652-4760
Fossil Ridge Inter.	383 S. Mall Drive	East St. George	652-4706
Dixie Middle	825 S. 100 East	St. George	628-0441
Pine View Middle	2145 E 130 No	East St. George	628-7915
Snow Canyon Middle	1215 N. Lava Flow Dr	Snow Canyon	674-6474

RUBRIC
Math 2020

Service Tutoring Paper

Student Name: _____

CONTENT	60 POINTS
Introduction **Body (case description, organization, quality of ideas, interest, focus, structure, fluency, etc)** **Summary** **Cited Research** **Utilization of Research** **Quality of Analysis**	
FIRST DRAFT	25 POINTS
Corrections complete (grammar, spelling, etc) **Tutoring Center Stamp/signature**	
FORMAT/STYLE	10 POINTS
Presentation (voice, includes tone, physical appearance)	
BIBLIOGRAPHY	5 POINTS
Includes at least three references of recent vintage. **Limited to one non-referred source and one interview**	
COMMENTS	

SERVICE TUTORING AGREEMENT

Thank you for agreeing to help supervise _____during this semester Fall 2010. The purpose of the 20 hours of tutoring this semester is to allow pre-service elementary teachers the chance to experience gains that can be made by students with one-on-one attention.

Your help is invaluable. As an experienced teacher, you are able to identify students that need help, and most importantly, you are able to provide suggestions and materials.

What you can expect:
This Student Tutor is well-grounded in the basics of elementary math. He/she has successfully completed College Algebra and the first course of Math for Elementary Teachers.

This Student Tutor will provide a consistent and reliable performance. Should this student fail to show for appointments or to come prepared, it is important that you relate this information to me (Kris Cunningham, 673-3553 ext 238). Please help me provide valuable learning experience for this student.

What the Student Tutor can expect:
The Student Tutor will be provided guidance in helping the assigned student(s).

The progress will be monitored.

The Student Tutor will receive help with ideas, when needed.

The tutoring should ALWAYS be supervised. It should take place only at the school or in the public library with parental attendance. *There should never be any tutoring related to this class provided at any private residence.*

Again, thank you for your help in providing this valuable opportunity.

Supervisor/Teacher:_____Grade Level:_____

School:_____
Phone:_____
E-mail:_____
Teacher Signature:_____

RUBRIC
Math/Literature Project

Name:_____ Date:_____

Use the following code: 5 Excellent   4 Very Good   3 Good   2 Okay   1 Fair

Description	Excellent	Very Good	Good	Okay	Fair
Speaks audibly and clearly	5	4	3	2	1
Content applicable to grade level	5	4	3	2	1
Makes eye contact w/audience	5	4	3	2	1
Reflects adequate level of creativity.	5	4	3	2	1
Uses class time well, including starting and stopping on time.	5	4	3	2	1
Objective is well-stated	5	4	3	2	1
Math concepts and literature connection is effective.	5	4	3	2	1
Presentation follows a scope and sequence	5	4	3	2	1
Instructions are clear	5	4	3	2	1
Conclusion/Summary is effective	5	4	3	2	1
Uses well chosen examples	5	4	3	2	1
Presentation is well-organized	5	4	3	2	1
Written lesson plan follows format	5	4	3	2	1