

**DEPARTMENT OF MATHEMATICS  
COLLEGE OF SCIENCES  
CENTRAL WASHINGTON UNIVERSITY  
COURSE SYLLABUS WINTER 2015**

1. **MATH 164**

<u>CRN</u>	<u>TIME/DAY</u>	<u>BLDG/ ROOM</u>	<u>INSTRUCTOR</u>
10410	9:00 – 9:50	Hertz 120	Dr. Janet Shiver

2. **Textbook and Materials:**

The text for this course is *Explorations in Elementary Mathematical Concepts through Activities* by Shiver and Willard, Kendall Hunt Publishing, ISBN 978-1-4652-2667-9

3. **Office Hours and Phone Numbers:**

Office: Bouillon 115

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Office hours: 2:00 -3:00 or by appointment

4. **Course Description:** This course is designed for students who plan to teach at the elementary or middle grades level and who have declared education as their major course of study. This course presents the fundamental topics underlying elementary and middle school arithmetic including problem solving, real numbers and their subsystems, and elementary number systems. Algorithms for addition, subtraction, multiplication, and division of real numbers are developed using a variety of activities.

5. **Course Rationale:** To meet the expectations for mathematics education of elementary teachers, a shift in content, instructional methods, and assessment practices is crucial. The *Principles and Standards for School Mathematics* (NCTM, 2000) outlined the specific changes needed in pre-service mathematics education. This document calls for prospective teachers to be taught using the methods they should model in their own classrooms. It also calls for teachers to have an understanding of the historical development and current applications of mathematics and the use of technology to promote mathematical understanding and to communicate meaning. This course is designed to address these changes in mathematics education and to prepare pre-service elementary teachers to teach important mathematical content to elementary students. This course will use the following reform ideas.

**MATHEMATICAL PRACTICES:** These CC Standards are based upon the NCTM's five process standards of problem solving, mathematical reasoning, communicating mathematically, making connections, and representation.

<b>Standards for Mathematical Practices</b>	
<a href="#">CCSS.Math.Practice.MP1</a> Make sense of problems and persevere in solving them.	<a href="#">CCSS.Math.Practice.MP5</a> Use appropriate tools strategically.
<a href="#">CCSS.Math.Practice.MP2</a> Reason abstractly and quantitatively.	<a href="#">CCSS.Math.Practice.MP6</a> Attend to precision.
<a href="#">CCSS.Math.Practice.MP3</a> Construct viable arguments and critique the reasoning of others.	<a href="#">CCSS.Math.Practice.MP7</a> Look for and make use of structure.
<a href="#">CCSS.Math.Practice.MP4</a> Model with mathematics.	<a href="#">CCSS.Math.Practice.MP8</a> Look for and express regularity in repeated reasoning.

**CONTENT:** The content areas are *Number and Operation* and *Algebra and Algebraic Thinking*. These topics will be studied while employing various manipulatives and hands-on experiences. The mathematical practice standards will be integrated into the content areas.

<b>Content Topics</b>
<p><b>1. Number and Operations</b></p> <ul style="list-style-type: none"> <li>• counting and cardinality;</li> <li>• the base 10 numeration system and the significance of place value;</li> <li>• fractions as numbers and the four operations using this subset of the real numbers;</li> <li>• properties of the rational numbers, including the fact that properties are specific to a particular subset of the rational numbers;</li> <li>• performing addition, subtraction, multiplication, and division of rational numbers using a variety of strategies;</li> <li>• recognizing relationships between the four arithmetic operations;</li> <li>• real-world and nonstandard problems involving the four operations on rational numbers.</li> </ul>
<p><b>2. Algebra and Algebraic Thinking</b></p> <ul style="list-style-type: none"> <li>• identifying and explaining patterns of arithmetic;</li> <li>• generating and analyzing patterns and relationships;</li> <li>• generalizing patterns using symbols, such as algebraic expressions and equations;</li> <li>• extending patterns while solving relevant problems.</li> </ul>

\*Outcomes are adapted from the *Principles and Standards for School Mathematics* (NCTM, 2000) and Common Core State Standards Initiative.

6. **Course Expectations:** Students will be expected to read the text **prior** to class, to complete all assigned problems and projects on time (at the beginning of class), keep a well organized notebook, and to seek outside assistance when difficulties are encountered. Take home assignments will be accepted up to one day late but 20 points will be deducted from the grade received on the assignment for any late

work. Textbook assignments will not be taken late. All Assignments should be NEATLY written **in pencil** and all supporting work must be shown.

7. **Absence Policy:** Regular attendance is essential for successful completion of this course. A student absent from a test or other class assignment will be given a **zero** unless excused in advance by the instructor. Extenuating circumstances such as illness or injury will be evaluated on a case- by- case basis but must be accompanied by a doctor’s note. Please have supporting documentation available for review upon returning to class or you will not be allowed to make up the missed work. *More than 4 absences from this class may result in a grade of F for the semester.*

8. **Grading Policy:** The course grade will be determined as follows:  
 Average of Unit Tests = 50%  
 Average of Homework/ notebook/labs/quizzes/projects = 25%  
 Attendance = 5% (0 absences – 100, 1 absence – 90, 2 absences – 80, 3 abs – 70, 4 abs – 60, 5+ abs - 0)  
 Final Exam = 20%

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	72-76%	70-72%	67-69%	63-66%	60-62%	<60%

9. **Academic Honesty:** The integrity of students and their written and oral work is a critical component of the academic process. All written work submitted in this course will be individual work unless instructed otherwise. Students must properly document all outside sources used for projects, programs, and homework. The submission of another’s work as one’s own is plagiarism, and will be dealt with using the procedures outlined in the Undergraduate Catalog.

10. **Course Outline:** This schedule is a **rough** estimation of the time that will be spent on the following topics. This schedule may be modified by the instructor at any time during the course.

<b>Week of</b>	<b>Topic</b>	<b>Assessment</b>
January 6 <sup>th</sup>	Problem Solving/ Algebraic Thinking	
January 12 <sup>th</sup>	Problem Solving/ Algebraic Thinking	
January 19 <sup>th</sup>	Problem Solving/ Number Systems and Sets	<b>No Class Jan 19th Test 1 – Chapter 1</b>
January 26 <sup>th</sup>	Number Systems and Sets	<b>No Class Jan 28<sup>th</sup></b>
February 2 <sup>nd</sup>	Number Systems and Sets	
February 9 <sup>th</sup>	Fractions	<b>Test 2 – Chapter 2</b>
February 16 <sup>th</sup>	Fractions/Operations	<b>No Class Feb. 16th</b>
February 23 <sup>rd</sup>	Operations	
March 2 <sup>nd</sup>	Operations	<b>Test 3 – Chapter 3 and 4A and 4B</b>
March 9 <sup>th</sup>	Operations	
March 16 <sup>th</sup> , Monday	<b>Final Exam 8:00 – 10:00</b>	<b>Final!</b>

11. **FIRE!!** In the event of a fire alarm signal students will exit the building in a quick and orderly manner through the nearest hallway exit. Learn the floor plan and exits of this building. Do not use elevators. Crawl on the floor if you encounter heavy smoke. Assist disabled persons and others if possible without endangering your own life.