

**DEPARTMENT OF MATHEMATICS  
COLLEGE OF SCIENCES  
CENTRAL WASHINGTON UNIVERSITY  
COURSE SYLLABUS SPRING 2018**

**1. Math 316**

<u>CRN</u>	<u>TIME/DAY</u>	<u>BLDG/ROOM</u>	<u>INSTRUCTOR</u>
36284	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

Graphing Calculator – TI 84 recommended

**3. Office Hours and Information**

Office: Bouillon 107E

Phone: 963-2834

Email: [shiverj@cwu.edu](mailto:shiverj@cwu.edu)

Office hours: 10:00 - 11:00 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 focuses on the conceptual and procedural understanding of ratios, proportional reasoning, percentages, decimal operations and models, number theory, and irrational numbers. Concepts are taught from a hands-on, problem-solving perspective.

**5. Course Rationale**

To meet the expectations for mathematics education of middle level teachers, a shift in content, instructional methods, and assessment practices is crucial. This course is designed to address these changes in mathematics education and to prepare pre-service middle level teachers to teach important mathematical content relating to proportional reasoning, number theory, and the real number system. This course will use the following reform ideas.

**Mathematical Practices:** These Common Core 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 *Proportional Reasoning* 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>
<ul style="list-style-type: none"> <li>• Proportional Reasoning</li> <li>• Define percentage and use proportional reasoning to solve problems involving percentages including percent increase and decrease</li> <li>• Explain the four basic operations in relation to decimal numbers <ul style="list-style-type: none"> <li>○ Represent decimal numbers as fractions including repeating decimals</li> </ul> </li> <li>• Define ratio and proportional relationships</li> <li>• Solve proportion problems with various methods including tables, double number lines, strip diagrams, and algebra</li> <li>• Express ratios as unit rates</li> <li>• Understand and explain inverse and directly proportional relationships</li> </ul>
<p>1. Algebra and Algebraic Thinking</p> <ul style="list-style-type: none"> <li>• Identify, explain, generate, analyze and generalize patterns and relationships <ul style="list-style-type: none"> <li>○ Sequences and Series</li> </ul> </li> <li>• Explore the different uses of algebraic equations</li> <li>• Solve algebraic equations including strip diagrams, balancing.</li> <li>• Define a function and represent it in multiple ways</li> </ul>
<p>2. Number Theory</p> <ul style="list-style-type: none"> <li>• Define factors and multiples</li> <li>• Represent a composite number as a unique set of primes</li> <li>• Define even and odd numbers</li> <li>• Prove and apply the divisibility tests</li> <li>• Develop methods for determining whether a number is prime or composite</li> <li>• Define and develop methods for finding the greatest common multiple and least common factor</li> </ul>

## 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 = 45%

Average of Homework/ notebook/labs/quizzes/activities = 20%

Teaching Project = 10%

Attendance = 5% (0 absences – 100, 1 absence – 90, 2 absences – 80, 3 abs – 70, etc)

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>
March 26 <sup>th</sup>	Review of Division	
April 2 <sup>nd</sup>	Decimal Numbers	
April 9 <sup>th</sup>	Ratio and Proportions	
April 16 <sup>th</sup>	Ratio and Proportions	<b>Test 1</b>
April 23 <sup>rd</sup>	Percentages	
April 30 <sup>th</sup>	Number Theory	
May 7 <sup>th</sup>	Number Theory	<b>Test 2</b>
May 14 <sup>th</sup>	Algebra	
May 21 <sup>st</sup>	Patterns, Sequence and Series	
May 28	Catch up	<b>May 28<sup>th</sup> No class Test 3</b>
<b>June 7<sup>th</sup>, Thursday</b>	<b>FINAL 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.

## 12. Electronic Devices

It is common courtesy to turn all electronic devices to "off" or "silent" mode when entering the library, classrooms and auditoriums. Please adhere to this policy. All cell phones should be kept out of site during the class. Please be sure they are placed in a pocket, purse, or backpack so they will not present a temptation during class time. Yes, I can see you texting under the table so please don't have them out.

## 13. Disability Accommodations

Any student requiring instructional modifications due to a documented disability should make an appointment to meet with me as soon as possible. An official copy of your "Confirmation of Eligibility for Academic Adjustments" from the Disability Support Services Office documenting the disability will be expected to receive such accommodations.