

PROPORTIONAL REASONING AND ALGEBRA

MATH 316 | SPRING QUARTER 2019

INSTRUCTOR:

Dr. Mark Oursland

Office: Science II 301D

Office Hours: M-Th 11:30-11:55am;F 9-11am

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COURSE DESCRIPTION:

This course is designed to for preservice teachers to learn the mathematics content for grades 4 – 8 using methods that will enable them to be effective mathematics teachers. The mathematics topics will be number theory, proportional reasoning, and beginning algebraic thinking.

COURSE RATIONALE:

In order to ensure that teacher candidates possess a deep understanding of development and culturally appropriate mathematical this course challenges both what mathematics is being learned and how it should be taught.

COURSE OBJECTIVES:

By the end of the course, students will be able to:

<u>Outcomes</u>	<u>Assessment</u>	<u>Standards</u>
Design and adapt developmental lesson plans, including conceptual and procedural milestones and common misconceptions, based on state/national standards within each upper elementary content domain.	Performance Tasks with Rubrics.	1.D.1 1.D.12
Adapt and enhance learning tasks for upper elementary grades by embedding mathematical practices to deepen students understanding of connections between procedures and conceptual understanding.	Performance Tasks with Rubrics.	1.D.2, 1.D.3 1.D.4 1.D.12
Use a variety of mathematical models and instructional strategies (technology & manipulatives) to understanding and solve real-world problems.	Performance Tasks with Rubrics.	1.D.2 1.D.3 1.D.11
Explain using language appropriate for mathematical problems solving, argumentation, literacy, and deep conceptual understanding.	Performance Tasks with Rubrics.	1.D.2 1.D.3
Represent proportional relationships using tables, graphs, equations, diagrams, mathematical models, and verbal descriptions.	Written Exams, Performance Tasks with Rubrics.	1.D.4.B 1.D.10
Apply conceptual understanding in analyzing and solving real world problems that require the use of ratios, rates, proportions, and scaling and explain connection to proportional relationships in geometry, measurement, statistics, probability and function.	Written Exams, Performance Tasks with Rubrics.	1.D.5 1.D.10
Utilize and explain arithmetic operations and properties of integers, rational, real numbers, and complex numbers using multiple procedures.	Written Exams, Performance Tasks with Rubrics.	1.D.10
Analyze, extend and generalize patterns both geometrically and algebraically.	Written Exams, Performance Tasks with Rubrics.	1.D.10

COURSE RESOURCES:

Canvas Check course announcements, messages, due dates, assignments and feedback before *each* class. Read Home page of the CANVAS MATH 316 course before starting the course.

Textbook - No textbook to buy, but we are using course modules.

ASSIGNMENTS AND EVALUATION GUIDELINES:

The instructional and assessment strategies for this course are designed to inform you of your progress in achieving the performance outcomes. The instructors will give you feedback on your progress in meeting performance outcomes.

Assignment	Points
Module assignments (50 points from 5 assignments)	10%
Group projects (125 points from 5 assignments)	10%
Practice Quizzes (50 points from 5 quizzes, may retake)	10%
Exams (500 points from 5 exams)	45%
Checking understanding assignments (50 points 5 assignments)	15%
Final Exam (100 points)	10%

COURSE ACTIVITIES:

The course will consist of daily activities, discussions, and lectures. You will need to bring completed work to class ready to explain or ask questions about the current and previous assignments. It is essential that you both do and keep all course work. After class work is completed you should complete the on-line quiz or submit the weekly assignment both of which are on CANVAS.

HOW TO LEARN MATHEMATICS IN THIS COURSE?

First, you need to understand what you will be required to know and be able to do in the course.

Read the daily prompt on CANVAS.

Second, you need to have the course math concepts and procedures explained and modeled.

In this course the math concepts and procedures are presented through daily activities, discussions, and lectures.

Third, you need to practice your knowledge and procedures by doing math problems.

In this course students practice their knowledge and procedures by doing two assignments and two quizzes per week. The assignments are submitted on CANVAS and the quizzes are taken on CANVAS.

Fourth, you need to check your understanding of the concepts and procedures.

In this course after students have practiced the math assignments, taken the practice quizzes (these quizzes can be taking an unlimited number of time) and completed the group project they will take an exam.

Fifth, you need to be able to explain and teach the math to other people.

In this course Group Discussion and Assignments will be used to share ideas about how to explain and teach the course concepts to secondary level students.

Sixth, you need to monitor your own progress in the course.

In this course if you do not understand an assignment or quiz question, contact you instructor by e-mail or phone for help.

GRADING SCALE

93-100% = A, 90-93% = A-, 87-90% = B+, 83-87% = B, 80-83% = B-, 77-80% = C+, 73-77% = C, 70-73% = C-, 67-70% = D+, 63-67% = D, 60-63%, 0-60% = F Please see the CWU Catalog for the eligibility requirements for an incomplete (I).

PERFORMANCE EXPECTATIONS

All of the assignments and directions can be found in the CANVAS menu. This course is made up of modules to be completed in order and then take the final exam. If you miss a class meeting or group assignment you must contact me and discuss a method for participating and completing the group assignment.

COURSE POLICIES:**Instructor Feedback/Communication**

Send me e-mails, phone calls, or visit me in my office if you would like to talk about the course or course content. I will use the Announcements tool in CANVAS to communicate changes to the course and other course information.

Suggestions for Success

Take the responsibility for your own achievement of these performance objectives. You can get individual help by e-mail or in person in my office. If at any time you have trouble-using CANVAS or do not understand an assignment make sure to contact the instructor. Use the activities, assignments, assessments and people such as the instructor to ensure that you understand the mathematical teaching concepts and can demonstrated this understanding in the form of the performance objectives.

Student Feedback/Communication

I welcome all feedback on the course. My preferred method of communication with individual students is via email. I am also available for office hours. If you experience a legitimate emergency (according to my standards), which will prevent you from completing required coursework on time, I expect you to communicate with me at the earliest reasonable opportunity. Please state the nature of the emergency, and when you expect to turn in the coursework.

Submitting Electronic Files

All electronic files must be submitted in .doc or .pdf format. If you do not have Microsoft Word, you can download Open Office Writer for free at <http://www.openoffice.org/>. This will allow you to open the instruction files, make changes and save in .doc or .pdf.

Late Work

- Late work will be given reduced points depending on how many days the assignment is late. If you take the quizzes and tests after the dates I will take 1 point for 2 days late, 2 points for a week late, and 5 points for 2 weeks late.
- Over 75% of the assignments and 100% of the exams must be completed before you can take the final exam, which is required. The due date and time associated with each quiz, assignment, exam and project are stated clearly in CANVAS.

UNIVERSITY POLICIES:**Academic Integrity**

Academic Integrity is a standard set for this course. Students are expected to complete all of their coursework and assignments using their original words and ideas and will properly cite the words and ideas of others. Students are also expected to be honest in their interactions with the instructor. A student found to have not upheld these expectations is subject to failing this course and shall be subject to disciplinary action or sanction. The University catalog defines the term "academic dishonesty" in all its forms including, but not limited to:

- cheating on tests;
- copying from another student's test paper;
- using materials during a test not authorized by the person giving the test;
- collaboration with any other person during a test without authority;
- knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an administered test or information about an unadministered test;
- bribing any other person to obtain an unadministered test or information about an unadministered test; substitution for another student or permitting any other person to substitute for oneself to take a test; plagiarism" which shall mean the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit;
- "collusion" which shall mean the unauthorized collaboration with any other person in preparing work offered for credit.

Documented incidences of Academic Dishonesty will be referred to Office of the Vice President of Student Affairs.

AMERICANS WITH DISABILITIES ACT (ADA)

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.