

MATH393:
Algebra, Data Analysis, and Geometry Concepts for Teachers
Spring 2012 Section 001 4 credit hours

Instructor: Dr. Trent Kull

Office: Bancroft 154

Office Phone: 803.323.4547

Math

Department: 803.323.2175

Campus Email: kullt@winthrop.edu

**Instructor's
Teaching
Schedule:**

MWF, 12:30 – 1:45p,
Owens G07

Office Hours:

MW: 2 – 3:30p
F: 8:15 – 9:15a

Instructor Website: <http://faculty.winthrop.edu/kullt/>

Modifications

The instructor reserves the right to make modifications to this syllabus. Students will be notified in class & by email.

Course Overview

The purpose of this course is to prepare prospective elementary and middle school teachers for teaching mathematical topics related to proportional reasoning, algebra, geometry, and basic data analysis. The emphasis is on developing a strong foundation of content knowledge. The prerequisites for the course are MATH 150, 291, and 292.

This course meets the Logic, Language, and Semiotics requirement through activities and requirements that require students to: (1) use logic and mathematical information to draw reasonable conclusions and (2) use the symbols and language of mathematics to communicate about problems and present solutions.

Grades

To ensure that you receive a certain letter grade (or better), you must attain a minimum overall percentage. These minima are: A: 90; B: 80; C: 70; D: 60.

Assignments/Assessments

Event	Percentage
Quizzes	10
Article responses	10
Skills check	15
Course exams	45
Final Exam	20

Student Learning Outcomes	Course Assessment of Goal
As a result of your work, you should have a more flexible understanding of proportional reasoning, algebra, geometry, and data analysis.	Exams Quizzes Skills Checks
After working and thinking together, you should develop a better appreciation for the discipline of mathematics, and the importance of deep understanding and explanation in the problem solving process.	Exams Article Responses
By participating fully, you should develop more connections between concepts in elementary mathematics and recognize their relationship to more advanced study.	Exams Article Responses
Through your experiences in this course, you should have a deeper appreciation for the content knowledge required to helping students develop a deep understanding and appreciation for mathematics that can follow them throughout their study.	Exams Article Responses

Required Materials

The required textbooks for the course are the following:

- *Mathematics for Elementary Teachers* (Third Edition) by Sybilla Beckmann
- *Mathematics for Elementary Teachers Activity Manual* (Third Edition) by Beckmann
- *Supplementary Materials for MATH291, MATH292, MATH294, & MATH393* (Version 5).

Homework/Quizzes

Expect homework assignments/quizzes to reinforce the lesson material and prepare you for exams. Expectations will be detailed during class, along with information on Blackboard.

Skills check

Expect homework assignments/quizzes to reinforce the lesson material and prepare you for exams. Expectations will be detailed during class, with some notes added to the course website. Further details can be found in the required *Supplementary Materials*.

Article responses

Locate and read two **research (primary source) articles** concerning proportional reasoning. The first must be related to our in class studies of proportional reasoning (Chapter 7) or algebra (Chapter 9). The first must be related to our in class studies of geometry (Chapters 13 and 14). For each article, write an APA citation, a brief summary, and a short description of how the authors have impacted your thinking. These should be posted on the online discussion area on or before the dates listed in the schedule.

You will visit the online discussion area to read the reflections of at least two other students' reflections per article assignment. You must then contribute a substantive reaction to that article and/or the reflection.

Further details are available in the required *Supplementary Materials* and will be posted on Blackboard.

Exams

These may be closed book, no notes, no computer, no cell phone, individual effort events.

Missed quiz/exam policy

I will not give make-up quizzes or exams for those missed. Instead, I'll use the following policy: For all quizzes and course exams, a missed event will result in a recorded zero score until the end of the course. At that time, the average score achieved on all other quizzes will replace a single missed quiz score, and the final exam score (percentage) will replace a single missed exam score. Note that all students must take the final exam for a grade. Moreover, once a student has been handed an exam, the event will be graded.

Students with Disabilities

Winthrop University is dedicated to providing access to education. If you have a disability and need classroom accommodations, please contact Gena Smith, Coordinator, Services for Students with Disabilities (SSWD), at 323-3290, as soon as possible. Once you have your Professor Notification Form, please tell me so that I am aware of your accommodations. If you require special testing consideration for a disability, contact the SSWD and bring me the appropriate paperwork in a timely fashion.

Policies

1. Review the student code of conduct for university policies on academic misconduct. Academic misconduct will not be tolerated and will result in a failing grade on the assignment and/or in the course. The full handbook is available online at: (<http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf>)
2. All electronic devices (including cell phones) other than a calculator should be on silent and kept in your book bag or purse throughout class time unless otherwise instructed. (Note if you have some educational, health, or physical reason for an electronic device you must work with your professor to inform them of the accommodation.)
3. The University attendance policy is stated in the current catalog (<http://www.winthrop.edu/recandreg/default.aspx?id=7380>).

SU Deadline: January 24
Spring Break: March 12 – 18

Course Withdraw Date: March 7
Final Exam: April 30

Course Calendar

The following is a tentative guideline, as I want to keep the flexibility to modify the pace and add or remove topics as appropriate. Exams do not share this flexibility -- this will allow more effective planning by all.

M	January 9	7.1	The meanings of ratio, rate, and proportion
W	11	7.2	Solving proportion problems by reasoning
F	13	REQUIRED	Skills check study
W	18 QUIZ	7.3, 7.4	Connecting ratios and fractions & using proportions
F	20	REQUIRED	Skills check study
M	23 QUIZ	7.5	Percent increase and decrease
W	25	9.1	Mathematical expressions and formulas
F	27	ASSESSMENT	Skills check attempt 1
M	30 QUIZ	9.2	Equations
W	February 1	9.3	Solving equations
F	3	AS NEEDED	Skills check study
M	6	9.4	Algebraic word problems
W	8	ASSESSMENT	Exam 1
F	10	AS NEEDED	Skills check study
M	13 QUIZ	9.5	Sequences
W	15	9.6	Series
F	17	AS NEEDED	Skills check study
M	20 QUIZ	9.7	Functions
W	22	9.8	Linear functions
F	24	AS NEEDED BLACKBOARD	Skills check study Article reflection 1 due
M	27 QUIZ	13.1	Polyhedra and other solid shapes
W	29	13.2	Patterns and surface area
F	March 2	ASSESSMENT	Skills check attempt 2
M	5 QUIZ	13.3, 13.4	Volumes and weights
W	7	14.1	Reflections, translations, and rotations
F	9	AS NEEDED	Skills check study
M	19	ASSESSMENT	Exam 2
W	21	14.2	Symmetry
F	23	ASSESSMENT	Skills check study
M	26 QUIZ	14.3	Congruence
W	28	14.4	Similarity
F	30	AS NEEDED	Skills check study
M	April 2 QUIZ	14.5 BLACKBOARD	Areas, volumes, and scaling Article reflection 2 due
W	4	15.1	Gathering data
F	6	AS NEEDED	Skills check study
M	9 QUIZ	15.2	Interpreting data displays
W	11	15.3	The center of data
F	13	ASSESSMENT	Skills check attempt 3
M	16	15.4	Distribution of data
W	18	ASSESSMENT	Exam 3
F	20	AS NEEDED	Skills check wrap up
M	23 QUIZ	AS NEEDED	Review
M	30	ASSESSMENT	Final Exam, 3 – 5:30p