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M 234.01: Higher Mathematics for Elementary School Teachers

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M234-01 Higher Mathematics for Elementary School Teachers   **Semester: Spring 2019**
TU 9:30-10:50 CRN 33542   **Location: LA 235**

Instructor: Richard Darnell, Office Math 002
                            Contact: Richard.Darnell@umontana.edu, phone 243-6812
                            Office hours: MTW 12-2 pm, Th 11 am – 1 pm, and by appointment.

Course Description: The study of algebra, number theory, probability and statistics for prospective
                            elementary and middle school teachers, including proportional reasoning, functions,
                            elementary number theory, statistical modeling and inference, and elementary
                            probability theory. Prerequisite: M132

Course Materials: Required Textbook, Beckmann, S. *Mathematics for Elementary Teachers with Activities
                            Plus NEW Skills. 5th edition.* (Pearson, 2018). ISBN13 978-0-13-439279-0

                            Notebook of choice, pencil/ pen, calculator

Learning Outcomes: Upon completion of this course, a student will be able to:

1. Apply algebra in many forms (e.g., as a symbolic language, as generalized
   arithmetic, as a study of functions, relations, and variation) and use algebra to
   model physical situations and solve problems;
2. Explain proportionality and its invariant properties;
3. Apply number theory concepts and theorems, including greatest common
   factors, least common divisor, properties of prime and composite numbers, and
   tests for divisibility;
4. Represent, analyze and interpret data;
5. Simulate random events and describe expected features of random variation;
6. Distinguish between theoretical and experimental probability and describe how
   to use one or both to determine a probability in a given situation.

Classwork: Class activities are a mix of individual, partner, group and all-class participation.
                            Activities with manipulatives and related discussions are difficult to replicate in the case
                            of an absence from class. Deeper learning occurs when students are in attendance to
                            share their explanations and methods of solving problems with each other. Please
                            attend regularly.

                            Reflections and follow-up activities on in-class group experiences are only available if
                            you are in class for the experience.

Homework: Homework is a mixture of textbook exercises, Moodle assignments, problems, and
                            preparation for future classes. Homework will be graded for thoughtful completion.
                            Minimal feedback will be provided – more detailed feedback may be obtained during
                            office hours.

Assessments: Periodic assessments will be given as needed, with prior advance. They will consist of 3
                            to 7 questions on the current topics of study. A comprehensive final exam is scheduled
                            for Tuesday, April 30, from 8 – 10 am.

Make-ups will ONLY be given under special and extenuating circumstances, such as a death in the family or illness, provided that: a note from the Health Service or doctor is furnished by the student AND permission is obtained from the instructor prior to the exam. The final exam is compulsory and no exceptions can be made about the date/time at which it is held- this date is determined by the University Administration.

Grading Policy: Your grade depends on three areas: Performance on exams and a final, and participation and completion in homework and group activities.

Requirement	Weight
Exams	45%
Final Exam	15%
Class attendance/homework/other graded activities	40%

You may change to Credit/No Credit up to the last day of the class. General credit will be awarded to students earning a D- or better. However, if you choose this option the grade cannot be counted towards the School of Ed requirement nor the UM graduation requirement.

Support: Math support can be obtained by attending the Math Learning Center in the Math Building and Math@UC, visiting your instructor's office hours, and by working on homework or studying with classmates. Do not wait until the week of exams to get help. Ask questions regularly both in class and out of class.

Feel free to use additional resources (and share anything worthwhile with the class), including web sites, YouTube videos, etc.

Accommodation: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors and Disability Services for Students (DSS). If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate accommodation.

Academic Honesty: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at the following web address: http://life.umt.edu/vpsa/student_conduct.php.

M234 Spring 2019 Schedule

Week	Chapter	Notes
1	Chapter 8 Number Theory	
2	Chapter 8 Number Theory	
3	Chapter 8 Number Theory	Thursday Assessment Number Theory
4	Chapter 7 Ratio & Proportion	
5	Chapter 7 Ratio & Proportion	Thursday Assessment Ratio and Proportion
6	Chapter 7 Ratio & Proportion	
7	Chapter 9 Algebra	Thursday Assessment Ratio and Proportion
8	Chapter 9 Algebra	
9	Chapter 9 Algebra	Wednesday Assessment Algebra
10	Wrap Up Chapter 9 Algebra Begin Chapter 15 Statistics	
11	Chapter 15 Statistics	
12	Chapter 15 Statistics	Thursday Assessment Statistics
13	Chapter 15, 16 Probability	
14	Chapter 16 Probability	
15	Review and Evaluation	Tuesday Assessment Probability Thursday and Evaluation Review Day
April 30: Final Exam 8-10 a.m. in LA 235		

*Acceptable reasons for a late drop are listed in the university catalog and include reasons such as accident, illness, family emergency or a change in work schedule. The following examples are not considered sufficient for a late drop: protecting GPA, forgetting to turn in the change slip, losing financial aid, losing eligibility to engage in sports.