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M 234.02: Mathematics for Elementary School Teachers

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**M 234: Higher Mathematics for Elementary School Teachers
Spring 2022**

Instructor: Ke Wu

Email: ke.wu@mso.umt.edu

Class time: M/W/F 12:00-12:50PM

Class location: 1/19-2/11 via Zoom (see Zoom link below); After 2/11 TBD.

<https://umontana.zoom.us/j/91595219859?pwd=WHI1K09mTXNTRjAxRnRWR3dFdjJEUT09>

Meeting ID: 915 9521 9859

Passcode: 934135

To allow most flexibility and accessibility, all our classes via Zoom will be recorded and the recordings will be accessible via Moodle.

Office hours: You are welcome to request a meeting with me or/and schedule weekly 30 minutes with me (scheduled by individual students). Just send me an email!

Prerequisites: Open to Elementary Education or (pre-ED) majors **only**, M132.

Text: Mathematics for Elementary School Teachers, 5th Edition, by Sybilla Beckmann

Supplies: A scientific calculator is recommended

Course Agenda: Chapters 7-9, 15, 16

Learning Outcomes:

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.

Course Assignments:

- (1) *Homework* is assigned and collected regularly.
- (2) *Four Tests:* Test 1 (chapter 7); Test 2 (chapter 8), Test 3 (chapter 9), Test 4 (Chapter 15)

- (3) *Final Exam* two options: You can take the final exam on **Monday, May 9th, 10:10-12:10AM**. It will be comprehensive over the whole semester. OR, you can use the average performance of the best 3 of the 4 tests as your final exam performance.

Test Revision Opportunity

The purpose of education is not to pass exams — the purpose of education is to learn and grow! Making mistakes and learning from them is a key component of the learning process. In this spirit, you may choose to revise your test (entirely open book/open internet) with the opportunity to receive up to 50% of the points back that you missed. To pursue this opportunity, you must critically examine each question that you missed (either partially or fully) on the exam. **First**, you must fully and clearly document your initial misunderstandings. **Second**, you must fully and clearly document the step-by-step process used to arrive at the correct solution. **Third**, you must include pedagogical text in your documentation that could help young learners learn from similar potential challenges and gain a deeper understanding of the material. You may document your initial misunderstandings and revised solutions using words, mathematical notation, and/or diagrams, as applicable.

Timeline: Revision needs to be submitted via Moodle 1 week after the test is graded and given back to you.

Grading distribution and scale:

The grading distribution will be approximately as follow:

Homework -----	50%
Tests -----	35%
Final exam -----	15%

Grading scale:

93 – 100%	A	90 - 92%	A-		
87 – 89%	B+	83 - 86%	B	80 - 82%	B-
77 – 79%	C+	73 - 76%	C	70 – 72%	C-
67 – 69%	D+	63 - 66%	D	60 - 62%	D-
Below 60%	F				

Administrative Policies:

Grade: You must earn a C- or better in this course to pass the requirement in the College of Education. You may change to CR/NC up to the last day of class and you will receive credit with a grade of D- or better. However, if you choose this option the grade can't be counted towards the College of Education requirement nor the UM graduation requirement.

Digital Access: Digital devices (like laptops and cell phones) are becoming increasingly important to success in college. In this course, you may need digital devices to access

readings, complete and submit written assignments, complete online tests/exam, verify your attendance, take in-class polls, coordinate with other students regarding group projects, complete and submit group projects. I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students. Given those challenges, I encourage students to contact me if they experience a technology-related problem that interferes with their work in this course. This will enable me to assist students in accessing support.

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.

Accommodation: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Grounds for Approving Petitions for Late Drops: According to the University catalog, some examples of documented circumstances that may merit approval are accident or illness, family emergency, or other circumstances beyond the student's control. When filling out the Course Drop Form, students are expected to check one of the following:

- ☐ An accident/illness prevented me from meeting course requirements.
- ☐ A family/personal emergency prevented me from meeting course requirements.
- ☐ I received no evaluation of my performance before a drop deadline.
- ☐ Employment schedule changed, preventing me from meeting course requirements.
- ☐ _____

Student Conduct Code: All students need to be familiar with the Student Conduct Code. You can find it in the "A to Z Index" on the UM home page.

SEMESTER SCHEDULE

Monday	Wednesday	Friday
	19-Jan Introduction	21-Jan Section 7-1
24-Jan Section 7-2	26-Jan Section 7-3	28-Jan Section 7-4
31-Jan Section 7-5	2-Feb Section 7-6	4-Feb Review
7-Feb Test 1	9-Feb Section 8-1	11-Feb Discussion
14-Feb Section 8-2	16-Feb Section 8-3	18-Feb Section 8-4
21-Feb Presidents' Day – No Class	23-Feb Section 8-5	25-Feb Section 8-6
28-Feb Review	2-Mar Section 9-1	4-Mar Test 2
7-Mar Discussion	9-Mar Section 9-2	11-Mar Section 9-3
14-Mar Section 9-4	16-Mar Section 9-5	18-Mar Section 9-6
21-Mar Spring Break	23-Mar Spring Break	25-Mar Spring Break
28-Mar Section 9-7	30-Mar Review	1-Apr Section 15-1
4-Apr Test 3	6-Apr Section 15-2	8-Apr Discussion
11-Apr Section 15-3	13-Apr Section 15-4	15-Apr Review
18-Apr Test 4	20-Apr Section 16-1	22-Apr Discussion
25-Apr Section 16-2	27-Apr Section 16-3	29-Apr Section 16-4
2-May Discussion	4-May Review	6-May Review
Final Assessment Monday May 9th: 10:10-12:10		

HOMEWORK ASSIGNMENTS

Section	Problems for Section	Due Date
7.1	4, 5, 7	26-Jan
7.2	2, 5 (a,d), 6 (only work on a,d), 11, 20	2-Feb
7.3	1 (only work on 5/7), 3, 4 (b), 5 (a,b,c), 6	2-Feb
7.4	1, 2, 7	2-Feb
7.5	1, 5, 7, 11	9-Feb
7.6	2, 5, 7, 22	9-Feb
8.1	3 (a,b), 4, 7	16-Feb
8.2	3, 4, 9, 11	23-Feb
8.3	1(c, d), 4, 9(b), 10, 15(a,b)	23-Feb
8.4	2, 3, 4, 5	23-Feb
8.5	2, 7, 9, 17	2-Mar
8.6	1, 4(a,c), 10	2-Mar
9.1	1, 9, 12	9-Mar
9.2	1, 3(a), 4, 7	16-Mar
9.3	1(f-k), 4, 7	16-Mar
9.4	4, 7, 15	23-Mar
9.5	1, 7, 13	23-Mar
9.6	2, 4, 12, 14	23-Mar
9.7	2, 3, 14, 15	6-Apr
15.1	1,6,7,8,10	6-Apr
15.2	1,3,4,5,7	13-Apr
15.3	3,6,9,12,13,18,20	20-Apr
15.4	1,3,9,10,14	20-Apr
16.1	2,3,5,6,8	27-Apr
16.2	1,2,4,6,8	4-May
16.3	4,12,14,16,17	4-May
16.4	1,8,13,17,19	4-May

* - indicates optional challenging problem