Fall 9-1-2021

M 234.01: Higher Mathematics for Elementary School Teachers

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HIGHER MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS

MATHEMATICS 234 SECTION 1

CRN 72448

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WEBPAGE `http://umonline.umt.edu/`

GOALS 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.

TEXT Mathematics for Elementary School Teachers, 5th Edition (Sybilla Beckmann)

LETTER GRADE Your letter grade in the course will be determined by assessment of your understanding of five predefined learning standards. For each standard, I will collect two pieces of work to help me understand your level of understanding: a traditional written exam and a performance assessment task (PAT). Your demonstration of understanding will be rated according to:

Score	Student demonstrates...	Classification
A	...mastery beyond the learning target	Beyond Proficient
B	...full mastery of the learning target	Proficient
C	...partial mastery of the learning target	Nearing Proficient
D	...minimal mastery of the learning target	Minimally Proficient
F	...no mastery of the learning target	Non Proficient

At the end of the semester, this collection of 10 grades (5 PATs and 5 Exams) will be used to determine your letter grade in the course. After dropping a single low score, your final letter grade will be assigned according to:

Grade	Semester's Assessment Results
A	All As and Bs with a majority of As
B	All As and Bs with a minority of As
C	A mix of As, Bs, Cs, Ds and Fs with a majority of As and Bs
D	A mix of As, Bs, Cs, Ds and Fs with a minority of As and Bs
F	A mix of As, Bs, Cs, Ds and Fs with a majority of Fs

PAT A performance assessment task (PAT) is an activity that asks students to demonstrate their knowledge, understanding and proficiency. Performance tasks yield a tangible product and/or performance that serves as evidence of learning. PATs usually present a situation that calls for learners to apply their learning in an authentic context.

± GRADE Your plus/minus grade will be determined by assessment of your effort in the course. This aspect will be measured through the collection of homework assignments. Let T be the total proportion of homework assignments completely attempted, then, your plus-minus grade will be assigned according to:

$$\begin{array}{rcccll} 0.90 & \leq & T & < & 1.00 & \Rightarrow \quad + \\ 0.80 & \leq & T & < & 0.90 & \Rightarrow \\ 0 & \leq & T & < & 0.80 & \Rightarrow \quad - \end{array}$$

Please note that there is no "$A+$" grade given at the University of Montana.

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`.

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 `http://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.

POLICIES You must earn a C- or better in this course to pass the requirement in the School of Education. You may change to Credit/No Credit up the last day of the class. 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 Education requirement nor the UM graduation requirement.

DATES September 20th is the last day to drop or add the course using Cyberbear. November 1st is the last day to drop with instructor and advisor signatures (W appears on transcript). December 10th is the last day to drop the course or change grading option using a late drop form (WP/WF appears on transcript). Acceptable reasons for a late drop are listed in the university catalog and are limited to: 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.

SEMESTER SCHEDULE

Monday	Wednesday	Friday
Aug 30 ST1/PAT1	Sep 1 S7.1	Sep 3 S7.2
Sep 6 Labor Day	Sep 8 S7.3	Sep 10 S7.4
Sep 13 S7.5	Sep 15 S7.6	Sep 17 Review
Sep 20 Assessment 1	Sep 22 ST2/PAT2	Sep 24 S8.1
Sep 27 S8.2	Sep 29 S8.3	Oct 1 S8.4
Oct 4 S8.4	Oct 6 S8.5	Oct 8 S8.6
Oct 11 Review	Oct 13 Assessment 2	Oct 15 ST3/PAT3
Oct 18 S9.1	Oct 20 S9.2	Oct 22 S9.3
Oct 25 S9.4	Oct 27 S9.5	Oct 29 S9.6
Nov 1 S9.7	Nov 3 Review	Nov 5 Assessment 3
Nov 8 ST4/PAT4	Nov 10 S15.1	Nov 12 S15.2
Nov 15 S15.3	Nov 17 S15.4	Nov 19 Review
Nov 22 Assessment 4	Nov 24 Thanksgiving	Nov 26 Thanksgiving
Nov 29 ST5/PAT5	Dec 1 S16.1	Dec 3 S16.2
Dec 6 S16.3	Dec 8 S16.4	Dec 10 Review
Final Exam Friday, December 17, 8:00-10:00AM		

HOMEWORK ASSIGNMENTS

Section	Problems for Section	Due Date
7.1	1, 2, 5, 8, 9*	SEPT 20
7.2	1, 3, 5, 12, 19ab	SEPT 20
7.3	2, 3, 5, 8, 11*	SEPT 20
7.4	3, 6, 7, 8, 9	SEPT 20
7.5	1, 3, 5, 9, 12*	SEPT 20
7.6	1, 2, 4, 5, 7	SEPT 20
8.1	2, 3, 4, 5, 9*	OCT 13
8.2	3, 4, 5, 6, 9*	OCT 13
8.3	1, 2, 3, 5, 6, 8, 9, 10	OCT 13
8.4	1, 2, 3, 4, 6*	OCT 13
8.5	2, 4, 7, 9, 13, 14, 21*	OCT 13
8.6	1, 2, 4, 7, 11*	OCT 13
9.1	1, 2, 6, 7, 9, 10, 12	NOV 5
9.2	2, 3, 4, 11, 14, 17, 21*	NOV 5
9.3	1, 3, 5, 6, 7	NOV 5
9.4	2, 4, 8, 14, 21	NOV 5
9.5	2, 5, 6, 8, 9, 23*	NOV 5
9.6	2, 5, 6, 7, 9, 11*	NOV 5
9.7	1, 3, 7, 14, 17, 26	NOV 5
15.1	1, 4, 8, 10, 12	NOV 22
15.2	1, 2, 3, 4	NOV 22
15.3	4, 7, 10, 13, 17, 21*	NOV 22
15.4	2, 3, 9, 10, 15, 17	NOV 22
16.1	1, 2, 3, 5, 7	DEC 17
16.2	1, 2, 3, 4, 6, 7, 8*	DEC 17
16.3	4, 5, 8, 10, 12, 14	DEC 17
16.4	2, 8, 10, 15, 17, 19*	DEC 17

Homework Philosophy

I view homework assignments as *formative* assessments. Formative assessments are meant to give students feedback so that adjustments in learning can be made to improve learning outcomes measured in *summative* assessments (i.e. mid-semester and final exams). As such, I expect you to correct your own homework assignments before handing them in for credit. This arrangement gives you immediate feedback on your understanding of course content and the opportunity to correct your misunderstandings and errors in thinking.

Homework Policies

- Corrected homework for each chapter is due by class time on the due date indicated, no late homework will be accepted for any reason. Homework must be neat, organized and well-labeled. When explanations are called for, provide them.
- Corrections should be done in a different colored pen or pencil. When your answer is wrong, correct the error and make notes to yourself. When the answer is correct, provide a mark that indicates that you have done the problem correctly.
- Homework solution keys will be provided on our Moodle page. Homework will also be collected via our Moodle page as an electronic assignment upload. Be prepared to upload a single pdf of all of your homework for each chapter on the dates indicated above.