

MATH 130: Elements of Mathematics I: Number Systems

CRN

*By registering and not dropping this course, you are indicating that you acknowledge and accept all policies.

INSTRUCTOR INFORMATION:

NAME: Dr. Maria Brunett **OFFICE:** 354 N SCIENCE CENTER **TEXT:** XXXXXXXX

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OFFICE HOURS:

If you are not able to visit during office hours, please email me to make an appointment. During normal office hours, you may visit without an appointment. However, you are expected to be prepared and behave appropriately while visiting: i. Do not use your cell phone. ii. Do not consume food. iii. You must have completed an attempt of homework/review problems before visiting – do not bring the review sheet to the office expecting to work the problems under my supervision. (I will look at the work you have done, make suggestions, and work out the corrections with you. I may give you additional problems to try after that. However, you are not to arrive expecting an extensive one-on-one re-teaching session or a make-up class due to absences.) iv. Have your questions ready and papers organized. (There is a table in the suite near my office – you may prepare there before visiting my office.)

COURSE INFORMATION:

- **Description:** An examination of mathematical reasoning, problem solving, and sets. Topics include concepts and processes involving numeration systems, whole numbers, number theory, integers, and rational numbers. Intended for elementary education majors, this course is also suitable for parents of school-age children.
- **Prerequisite:** A grade of C or better in MATH 096, appropriate score on the mathematics assessment test, or consent of department. Assessment Level(s): ENGL 101 /ENGL 101A or AELW 940, READ 120 or AELR 930 .
- **Gen Ed:** MA 130 fulfills a General Education Program Mathematics Foundation requirement. Montgomery College's General Education Program is designed to ensure that students have the skills, knowledge and attitudes to carry them successfully through their work and personal lives. This course provides multiple opportunities to develop two or more of the following competencies: written and oral communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy. For more information, please see www.montgomerycollege.edu/gened. While 130 satisfies MC's Gen Ed requirement, if a student transfers to another school without a degree, it may or may not count as the Gen Ed requirement being met. Detailed information about teacher education at Montgomery College, and the process of transferring for a four year degree, may be found at <http://cms.montgomerycollege.edu/edu/departments.aspx?id=10505> For questions, email TeacherEdAdvising@montgomerycollege.edu
- **MA130 Common Course Outcomes**

#	Outcome: Upon completion of this course a student will be able to:
1	Apply two distinct methods to find the LCM and GCF of two whole numbers.
2	Classify and solve application problems involving the four arithmetic operations.
3	Communicate mathematical ideas effectively using appropriate vocabulary and grammar.
4	Construct and interpret Venn diagrams.
5	Explain how and when to employ procedures for estimation and mental computation of operations on whole, integer, rational, and decimal numbers.
6	Explain how to apply alternate algorithms for arithmetic operations.
7	Explain how to apply different strategies (working backwards, tables, etc.) to solve non-routine problems.
8	Find and describe patterns including finding the nth term of a sequence.
9	Identify and apply properties and classifications of whole, integer, and rational number operations.
10	Interpret set notation and apply set operations.
11	Prove or disprove conjectures about factors and multiples.

- **COURSE CHANGES:** The instructor reserves the right to alter the schedule of the course if necessary but will notify the students of any changes to the schedule before the changes are implemented. See tentative course schedule on last page of this document.
- **COURSE PHILOSOPHY AND EXPECTATIONS: Please also see the ground rules handout. Announcements are made via Blackboard not in class. Students are expected to check Blackboard daily. Class time is dedicated to mathematics.** This class is intended to work toward increasing the depth of your understanding of the mathematics taught in grades K – 8. At the start of this course you know many algorithms for arithmetic, such as how to subtract any two three-digit whole numbers or how to divide two fractions. By the end of this course you will be expected to explain algorithms, determine when which algorithm is most appropriate, demonstrate how to picture or describe an algorithm in another way, relate various concepts and algorithms to each other, and solve and make up problems set in realistic contexts, including “story problems”. This is a mathematics content course, not a methods course. You are learning mathematics, not how to teach mathematics. However, you will gain some ideas about how to teach mathematics in grades K - 8. Throughout this course, in class, on take-home assignments, and on exams, you will be asked to “explain why or why not” or to “justify your answer.” In other words, you will be expected to explain why the procedure you are using works or why the answer you give is correct. You will be most successful this semester if you continually ask “why?” as you read, listen, and solve problems. Seeking connections and meaning can be a very rewarding way to learn—and someday teach—these math ideas. Many class sessions will include time working with other students in groups (randomly generated), whole class discussions, and opportunities for students to explain their thinking. These experiences have been designed both to maximize opportunities to reflect on the content more deeply and to provide experience giving explanations—an important skill for future teachers to develop. Thus, participating in class is very important to gain the most from the course. There will be numerous opportunities for you to participate in class. You will be asked to work collaboratively and present your work to the class. Please see the grading policies section to learn how you will receive credit for participation. Class time is to be devoted to the mathematics content of this course. All grading policies are provided in this syllabus. Any changes to policies and/or announcements of quizzes, tests, reviews, etc. will be posted in Blackboard. If you have any questions, please email me for clarification, do not use class time to discuss grading policies.
- **Mobile phones, laptops, & talking:** Students using mobile phones, working on homework on laptops, and talking amongst students is a big distraction to many students and to me. Use of mobile phones is not permitted at any time during class. If students do not comply to this policy, they will be required to leave the classroom. Laptops or talking amongst students will NOT be permitted any time that the whole class should focus on my presentation or during whole class discussions. During the time that students are to complete worksheets or activities, talking amongst students will be encouraged as you discuss the work. During this time, you may use your laptop once you have completed the worksheet or activity and verified your solutions with me.
- **Letters of Recommendation:** There has been an increase in the number of requests for letters of recommendation. I can generally handle two to three letters per semester. Students should keep the following guidelines in mind before they request a letter of recommendation:
 - i. Grade in course and all exams must be 87% or higher.
 - ii. Homework must be completed on time with above average performance.
 - iii. Attendance in class must be perfect or nearly perfect.
 - iv. Behavior in class must be exemplary – no mobile phone use, no laptop use, and no talking at inappropriate times.
 - v. Participation in class should be more than perfunctory.

COURSE MATERIALS:

- **Textbook and MyMathLab:** *Math for Elementary Teachers w/Activities (LoosePages w/MyMathLab) 5th Edition, Beckmann ISBN 9780134800196.*
The print textbook and a MyMathLab access code are **both required** for this course. They may be purchased at the book store. The loose pages version of the book is recommended since the

included activity manual will be used in class regularly, and students can carry just what they need for each unit. *Note:* This textbook and MyMathLab access code will also be used for MATH 131 and MATH 132. The one-time purchase of the MyMathLab code will be good for as long as you use the current textbook.

- **MML COURSE ID:** brunett84353
- **OPEN MIND & WILLINGNESS TO EXPLORE & PARTICIPATE:** The approach in Beckmann's text is inquiry-based, and students learn the math content through hands-on activities and in-class exploration.
- **COMPUTER & INTERNET ACCESS:** In addition to using the internet for online homework via MyMathLab, students need access to the course Blackboard page to access power points, review materials, and submit assignments.
- **CALCULATOR:** A basic, scientific, or TI-84 (preferred) calculator may be used in the class. Models TI-89 and TI-92 are not permitted. Calculators will be integrated throughout the course as a tool for investigations and problem solving.
- **NOTEBOOK:** A three ring notebook is recommended for handouts and worksheets.
- **COLORED PENCILS/PENS:** Colored pencils/pens are great to help emphasize steps or add clarity to solutions.
- **RULER/STRAIGHT EDGE:** Any simple straight edge can be used to help with some problems.

RESOURCES:

- **Online Educational Resources (OERs):** In past semesters with MATH 130, our faculty members have learned that there are five areas in which students often need extra support. Resources for these five areas in particular are located online at <http://libguides.montgomerycollege.edu/math130>
- **The Ackerman STEM Learning Center** is located on the ground floor of Science Center West (SW) (240-567-5200). This is an open space to work and/or seek specialized help from faculty and student tutors. Graphing calculators may also be borrowed from the Center. Hours are M - R 8am to 8pm, F 8am - 4pm, Sat. 10am – 3pm.
- **DISABILITY SUPPORT SERVICES:** Any student who needs an accommodation due to a disability should make an appointment to see the course instructor during office hours. Students must remind the professor at least five days in advance of all accommodations requests. In order to receive accommodations, a letter from Disability Support Services (CB – 122) will be needed. Any student who may need assistance in the event of an emergency evacuation must identify to the Disability Support Services Office; guidelines for emergency evacuations for individuals with disabilities are found at: <https://cms.montgomerycollege.edu/EDU/Plain2.aspx?id=4162>

GRADING POLICIES:

- **My Math Lab (MML) Assignments:** You are required to use the online software, MyMathLab®, to complete pre-class assignments. The problems in MML are basic skill review problems. This homework **must be completed prior to class**; you will see the due date for MML assignments is the day of the class in which that section will be addressed.
- **Textbook Homework Assignments, Class Activities, & Board Points:** Written homework from the textbook will be assigned for each class. These assignments will not be collected or graded, but students will be asked at random (cycling throughout the class list) to put solutions on the board at different times during class. Bring solutions to each class meeting. Students should make every reasonable attempt to solve the homework problems to prepare for class. If you are uncertain about a solution or uncertain about how to start the problem, you can still receive credit for board points if you write appropriate question about your solution or about the problem. **Quizzes will be based on problems similar to these.** Class activities are integrated into the class handouts. Several times per class meeting, students will be required to work with a partner or in a group to solve problems. Students will be randomly called upon to write solutions on the board. If you and your group can't solve the problem assigned to you, then you must come up with a few appropriate questions that you need answered to help you. **Appropriate questions must demonstrate thought – not stating "I don't know how to do this."** Board work will

count toward board points. Students will be assigned a score of 0 to 5 points each time he/she visits the board. Points will be awarded based on the accuracy of the work and/or questions posed. It is anticipated that students will visit the board 6 to 10 times during the semester.

- **PARTICIPATION POINTS:** Students will receive a participation grade of 0 to 5 points for each class. Absent: 0 points, Present: 1 point, Not using electronics: 1 point, Not side talking: 1 point, completing activities of the 1st half: 1 point, completing activities of the 2nd half: 1 point. I will circulate the room during class work to check for evidence of work.
- **REFLECTIONS:** Four to five reflections will be completed during the semester; the reflection prompts will be provided on the Blackboard site for the course. Some prompts will be content related, some will be about study skills or test strategies, and some will be more general. Your response should be at least 100 words in length; the final reflection will be required to be 250 to 500 words. Due dates for reflections are given on the class schedule and reminders will be given via blackboard. Please keep track of the reflection due dates.
- **FINAL COURSE REFLECTION ASSIGNMENT:** This assignment will contain several writing prompts to give students the opportunity to write about their experience in MA 130. Students will be expected to reflect on a given topic, use content examples from the course, and write clearly with proper mechanics and precise mathematic language.
- **QUIZZES:** Quizzes will be given in-class, as noted on the class schedule. Quiz announcements will be made via Blackboard but quizzes will not be announced in class. Please keep track of the quiz schedule.
- **TESTS:** There will be (3) tests in addition to the final exam. Tentative dates are: **Tues. Sept. 18, Tues. Oct. 16, Tues. Nov. 13.** On test days, the class time will be structured as follows: first 15 minutes for questions and test directions, the remainder of the time will be for the test. After completing the test, please hand it to me personally. You are dismissed at this time. The only questions permitted during an exam are in reference to a misprint, omission, or illegible text. You must turn in your test paper when time is called. I will give a warning before collecting exams. If you do not hand in your paper at collection time; I will not accept it later. Please keep track of time during the exam.
- **FINAL EXAM:** The final exam on **TUESDAY, DEC. 11TH 12:30 – 2:30 PM**, is mandatory and counts for at least 25% of your final grade. It will also replace your lowest test score if your final exam percentage is greater than that test percentage. Everyone must take the final exam. It will count for 25% of your final grade regardless of whether it is used to replace your lowest previous test score.

GRADING POLICY AND CRITERIA:

Your final grade will be determined according to the following distribution:

- 5 % My Math Lab "PRE-CLASS"
- 5 % Participation
- 5 % Board Points
- 25 % QUIZZES & REFLECTIONS
- 30 % TESTS
- 25 % FINAL EXAM
- 5 % Course Reflection Assignment

GRADE SCALE

- A: 90 – 100%
- B: 80 – 89%
- C: 70 – 79%
- D: 60 – 69%

All scores will be recorded in Blackboard. Your current average will be posted in blackboard. Homework scores are recorded in blackboard after the test on that unit. Check your average after each test. **NOTHING** can be done to improve your grade after the final exam.

MAKE-UP POLICIES:

- **MyMathLab:** No credit will be received after the deadline. If your grade is important to you, then do the MML assignments on time. If you anticipate that you will have a busy time with other classes or other aspects of life, complete the assignments ahead of time. The assignments are not

challenging, rather they are skills review. A brief textbook assignment will be assigned from each section for more challenging problems.

- **Board Points:** Board points will be given for homework and class work. Students will be called on randomly for both types of board work. If you are absent on the day you name is randomly selected for either type of board work, your name will be skipped, but called later in that cycle. If you are absent repeatedly and miss a random cycle, then you will receive a grade of zero for that cycle of board points. Do not make appointments and/or travel plans during class times.
- **Class Participation:** Class participation will be recorded every class period. Two scores will be dropped to account for a reasonable number of absences. Many opportunities will be given to present in class. Everyone must complete the same number of class presentations, but not everyone will present each class. Students should keep track along with the professor of how many presentations they have done and how many they need to do so as to not miss completing them. Two participation scores will be dropped to allow for two unscheduled absences. Scores will be excused for participation in college functions. Scores may be excused for extreme circumstances. Students will have to email prior to absence. Do not make appointments and/or travel plans during class times.
- **REFLECTIONS:** Assignments that are to be completed outside of class should be handed in on time. If you are absent, you can submit the paper through Blackboard, as appropriate. Each student receives two "No Questions Asked" (NQA) coupons to use to extend a deadline of an outside of class assignment.
- **IN-CLASS QUIZZES & TESTS:** If you know that you will be absent on the day of a quiz or test, it may be possible to make arrangements with me to take the quiz/test on an earlier day. This alternative is not automatic!! Each case will be considered individually. You should notify me as soon as possible regarding planned absences. For unexpected absences, you must email or text me by 10 AM that day. I will consider the circumstances and decide whether or not a make-up is possible. If a make-up is not possible, the default make-up policies will be in effect: I will drop two of your lowest quiz scores and the average that you earn on the final will make-up the score for a missed exam.

COURSE & COLLEGE POLICIES:

- **ACADEMIC DISHONESTY:** Academic dishonesty in college is a very serious offense. Each student is expected to do his/her own work on all quizzes and tests and class and homework exercises. Students who engage in any act that the classroom instructor judges to be academic dishonesty or misconduct are subject to sanctions. For more information, please refer to Number 42001 in <http://cms.montgomerycollege.edu/pnp/#chapter4>.
- **ATTENDANCE POLICY:** Attendance is extremely important in the successful completion of any course, and in this course your participation will be key to learning the "why" behind the math content we will study. Students are expected to be **on time** and to attend all class sessions, and to contact the instructor as soon as possible when classes are missed – however, do not ask what you missed in class. An announcement will be posted on our course Blackboard page after each class listing what was done in class. It is the student's responsibility to obtain missed information from a classmate. Students must also submit assignments on-time via blackboard or via email. In the case of excessive absences (defined as three or more sessions for this course) per Montgomery College policy, you may be dropped from the class.
- **E-MAIL COMMUNICATION STATEMENT:** MC student e-mail is an official means of communication for Montgomery College. Students are responsible for information and announcements sent via MC e-mail, and it is expected that students check their student e-mail regularly. When e-mailing an instructor, it is expected that students use their MC student e-mail account. Sign your email with your first and last name.
- **OTHER IMPORTANT STUDENT INFORMATION:** In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site

(<http://cms.montgomerycollege.edu/mcsyllabus/>) to assist you in having a successful experience both inside and outside of the classroom. It is important that you read and understand this information. The link below provides information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College Alert System, and finally, how closings and delays can impact your classes. If you have any questions, please bring them to your professor. As rules and regulations change they will be updated and you will be able to access them through the link.

- **ADDITIONAL RESOURCES:** Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, is urged to contact the Dean of Students Affairs on your campus. (<http://cms.montgomerycollege.edu/edu/secondary5.aspx?urlid=55>).
- **COURSE SCHEDULE:** See next page.

MA 130 BRUNETT

TENTATIVE DETAILED COURSE SCHEDULE

FALL 2018

Details about quizzes, tests, reflections, pre-class and homework assignments all posted on blackboard after each class!

DATE	DAY	TOPICS	QUIZZES, TESTS, REFLECTIONS
08.28.2018	TUES.	1.1 The Counting Numbers; 1.2 Decimals and Negative Numbers	
08.30.2018	THURS.	1.3 Comparing Numbers in Base-Ten; 1.4 Rounding Numbers	
09.03.2018		LAST DAY TO DROP WITH REFUND & NO GRADE RECORDED	
09.04.2018	TUES.	8.3 Divisibility Tests; 2.1 Solving Problems and Explaining Solutions	QUIZ #1
09.06.2018	THURS.	2.2 Defining and Reasoning About Fractions ; 2.3 Equivalent Fractions;	REFL. #1
09.11.2018	TUES.	2.4 Comparing Fractions	QUIZ #2
09.13.2018	THURS.	3.1 Interpretations of Addition and Subtraction;	
09.17.2018		LAST DAY TO CHANGE AUDIT/CREDIT	
09.18.2018	TUES.	TEST #1 (1.1 – 1.4, 2.1 – 2.4, 8.3)	TEST #1
09.20.2018	THURS.	3.2 Commutative and Associative Properties of Addition, Mental Math, and Single-Digit Facts; 3.3 Why the Common Algorithms for Adding and Subtracting Numbers in the Base-Ten System Work;	
09.25.2018	TUES.	3.4 Adding and Subtracting Fractions; 3.5 Adding and Subtracting Negative Numbers;	QUIZ #3
09.27.2018	THURS.	8.1 Factors and Multiples; 4.1 Interpretations of Multiplication;	REFL. #2
10.02.2018	TUES.	4.2 Why Multiplying by 10 is Special in Base-Ten; 4.3 The Commutative and Associate Properties of Multiplication, Areas of Rectangles, and Volumes of Boxes;	QUIZ #4
10.04.2018	THURS.	4.4 The Distributive Property; 4.5 Properties of Arithmetic, Mental Math, and Single-Digit Multiplication Facts;	REFL. #3
10.09.2018	TUES.	4.6 Why Algorithms for Multiplying Whole Numbers Work;	QUIZ #5
10.11.2018	THURS.	8.4 Prime Numbers;	
10.16.2018	TUES.	TEST #2 (3.1 – 3.5, 4.1 – 4.6, 8.1)	
10.18.2018	THURS.	5.1 Multiplying Fractions; 5.2 Multiplying Decimals;	
10.23.2018	TUES.	5.3 Multiplying Negative Numbers; 5.4 Powers and Scientific Notation;	QUIZ #6
10.25.2018	THURS.	6.1 Interpretations of Division; 6.2 Division and Fractions and Division with Remainder	
10.30.2018	TUES.	6.3 Why Division Algorithms Work;	QUIZ #7
11.01.2018	THURS.	6.4 Fraction Division from the "How Many Groups?" Perspective;	REFL. #4
11.06.2018	TUES.	6.5 Fraction Division from the "How Many in One Group?" Perspective;	QUIZ #8
11.08.2018	THURS.	8.6 Rational and Irrational Numbers;	
11.12.2018		LAST DAY TO DROP WITH W GRADE	
11.13.2018	TUES.	TEST #3 (5.1 – 6.1 – 6.5, 8.4)	TEST #3
11.15.2018	THURS.	6.6 Dividing Decimals; 8.2 Even and Odd;	
11.20.2018	TUES.	Venn Diagrams;	
11.22.2018	THURS.	NO CLASS THANKSGIVING BREAK	
11.27.2018	TUES.	9.5 Sequences;	
11.29.2018	THURS.	8.5 Greatest Common Factor and Least Common Multiple	QUIZ #9
12.04.2018	TUES.	REVIEW FOR FINAL EXAM	COURSE REFL.
12.06.2018	THURS.	REVIEW FOR FINAL EXAM	QUIZ #10
12.11.2018	TUES.	FINAL EXAM 12:30 – 2:30 PM	