Math 2010 Q: Fundamentals of Algebra and Geometry Fall 2019 Course Syllabus

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Office Hours: Tuesdays and Thursdays: 9 - 10:00
Class meetings: Tuesdays and Thursdays: 11:00-12:15 ***Location:*** MONT 414

COURSE OVERVIEW Math 2010 is a mathematics course, and so the primary goal is to improve, broaden, and deepen your facility with and understanding of school mathematics. In order for you, the teacher, to help children develop persistence and flexibility, build on one another's ideas, and communicate and justify their findings, you too must be successful, confident problem-solvers with a deep understanding of fundamental mathematics. In particular, you should finish this semester with a *solid understanding* of the concepts covered as well as comprehension of *why* the various procedures work the way they do. Numeracy, the ability to represent, communicate, and interpret quantitative information, has become an integral part of our social definition of literacy, and it is stressed in the *Common Core Standards for Mathematical Practices* that as a teacher you will be responsible to develop in your students. Thus, another goal for the course is to strengthen your *spoken and written communication* within mathematics. Writing well in mathematics requires fluency in the precise descriptive language of mathematics and careful logical organization. The writing portions of assignments will also serve to start you on your way to making the transition from learner to teacher of mathematics. While we will address different ways of approaching the material, this course is *primarily about mathematics*; it will prepare you for taking the methods course in the School of Education where you will focus on how to teach it.

COURSE REQUIREMENTS PSYC 1100 and three credits of Mathematics other than MATH 1010. Not open for credit to students who have passed MATH 2110 or 2410 or 2130. This course is restricted to students in the Elementary Education Program at the Neag School of Education.

COURSE INFORMATION Textbook: *Mathematics for Elementary Teachers with Activities* by Sybilla Beckman. Pearson, New York, NY. 5th Edition.

Tentative coverage: Chapter1--Chapter 7 (some sections may be omitted)
- Mathematical problem-solving, reasoning and communication;
- Number systems and computational algorithms: Emphasis on understanding why the algorithms work, students' non-standard approaches, and multiple ways of representing and interpreting the different operations; and
- Proportional reasoning, including relative and absolute thinking, ratios, fractions and percentages, covariation and invariance, representing, verbalizing, and symbolizing proportional relationships.

Other materials: I will supplement our textbook throughout the semester. Make sure you receive a **copy of all supporting material**s. Homework and important announcements will be posted on HuskyCT. Plan on checking the site regularly, at least twice a week in preparation for class.

Class meeting format: This course is structured to provide you with the experience of developing your own mathematical ideas. Our classroom will be a student-centered classroom where I will take the role of facilitator guiding you in the learning process, helping you when you get stuck and providing the over-arching context for what you are doing. The important point is that **you will be doing rather than listening to lectures**. You will work on activities that will lead you toward understanding of concepts behind familiar operations as well as some new ideas. We will often work in collaborative groups of 2 or 3 to stimulate dialogue between you through "hands-on" activities and systematic inquiry (to communicate understanding, justify your thinking, and pose new problems).

Useful items: Pencil, eraser, a 3-ring binder, a calculator (no Cell-phone calculators allowed in class!), colored pencils, and a clear plastic ruler.

- The best way to insure your successful completion of this course is to **come to class, take careful notes, and keep up with the assigned problems and quizzes**!
- **This is a challenging 2000-level course**: 2 student hours devoted to assignments and preparation for every hour of classroom time is a reasonable expectation for an average student. Be responsible for your own learning!
- Barring unforeseen medical or other serious conditions, I expect you to be in class on time every day. **If you must miss a class, please let me know** (email me) prior to class time and be sure to contact a classmate to find out what you missed.
- **If your expectations are not being met see me immediately**. If you think you are in danger of failing (or of getting a grade that you do not want) you should see me. I **cannot** give you any extra credit assignments or an incomplete, but I **can** make recommendations regarding drops, study habits, test taking skills, future courses, etc.

COURSE ASSIGNMENTS

Reading Assignments and Course Notes: As a future teacher, you should be able to read and understand mathematics textbooks recognizing “Big Ideas,” important concepts and results. In this course you will be asked to read sections of the book and take notes of readings. These notes together with your notes from class will serve as **your course notes**. Make sure your notes are complete, organized, and up-to-date. I recommend that you keep all lecture notes, activities, homework solutions, and any graded work in a 3-ring binder. Please Bring your textbook to class along with your assigned work.

Homework and Quizzes: Homework problems will be assigned each class period. These problems will not be collected, however, you are still expected to complete them since the quizzes in class will be based off of this material. If you can successfully complete the homework problems, then you should be able to do well on the quizzes. In-class quizzes will be given regularly and will be announced one week in advance.

Submitted work guidelines: Submitted work (quizzes and exams) should be neat, organized, and clearly presented. Prose explanations of your work should be regularly included with the solutions to application problems.

Tests and Final Exam: Two in-class tests will be given this semester. The second test will cover all the material that remains untested. The tentative dates will be announced. The final exam is cumulative covering all the material presented throughout the semester.

ABSENCES: You are responsible for completing your lecture notes, in-class activities, and submitting any collected work ***before the next class meeting***. Special accommodations for

emergency situations need to be arranged with me as soon as possible.

EVALUATION:
Exam 1: TBD, Exam 2: TBD
Final Exam: (TBD by Registrar'sOffice)

Grading Scale:
Participation, Homework, Quizzes: 30%
Exam 1: 20% Exam 2: 20% Final (Cumulative): 30%

Make-up policy: Make-up exams will be given within a week from the original and only under extreme situations. If you need to miss an exam, you need to notify me as soon as possible to work on the necessary arrangements, including appropriate documentation.

Attendance: As future teachers, I expect that you are committed to learning and will not miss class. A lot of what I hope will happen for you in this course will take place inside the classroom, working in groups and talking with others. Most of the times you will be asked to write up your ideas and solutions, and *always* you are expected to think about the problems, participate in solving them, and communicate your ideas with others.

UNIVERSITY POLICIES This course follows the university policies regarding the topics listed below. For details, please visit: http://provost.uconn.edu/syllabi-references/ Special Learning Arrangements, Academic Honesty and Integrity, Final Exams, Policy Against Discrimination, Harassment and Related Interpersonal Violence, Sexual Assault Reporting Policy, Statement on Absences from Class Due to Religious Observances and Extra-Curricular Activities

Final exam TBA : Students are required to be available for their exam during the stated time. If you have a conflict with this time, you must visit the Dean of Students Office to discuss the possibility of rescheduling this exam. Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not viable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office with any questions.

REVISED

WEEKLY SCHEDULE Section & Topic: Homework
(Tentative and subject to change according to class progress)

Week 1

1.1: The Counting Numbers: 2, 3, 6, 7, 9
1.2: Decimals and Negative Numbers: 2 , 4, 7, 8, 9, 12, 13, 14.

Week 2

9/3 1.3: Reasoning to Compare in Base 10: 3, 6, 7, 10, 11, 13
9/5 **Quiz #1 Sections 1.1 + 1.2.** (2.1: Solving Problems & Explaining Solutions1: Activity 2D)
2.2: Defining and Reasoning about Fractions: 3, 4, 5,7,10,16,20a,c.,

Week 3

9/10 2.3: Reasoning about Equivalent Fractions: 1,3,5,7,10,14,18.
9/12 2.4: Reasoning to Compare Fractions: 1,2,4,6,7,11,17

Week 4

9/17 2.5: Reasoning about Percent: 3, 4, 8, 9, 10, 17, 20. 3.1: Interpretations of Addition and Subtraction : 1,3,5,6,8
9/19 **Quiz #2 Sections 2.2, 2.3,2.4** . 3.2: Commutative and Associative Pties of Addition 2, 3, 4(a,c), 5, 6, 7, 8.

Week 5

9/24 3.3: Why Standard Addition Algorithm works: 1,3,4,5,7,10,14
9/26 3.4: Reasoning about Addition and Subtraction of Fractions 3.4: 1,2,5,6,10, 11, 12, 13, 16.

Week 6

10/1 **Quiz #3 Sections 3.1 3.2,3.3**. Questions to review for Exam #1
10/3 **Exam #1 1.1-1.3, Different Bases, 2.1-2.5, 3.1-3.4.**

Week 7

10/8 4.1: Interpretations of Multiplication : 1,2,3,5,8. 4.2: Why Multiplying by 10 is Special : 1,2,3
10/10 4.3: Commutative and Associative Pties of Multiplication : 2,7,8,9,10,13,20.

Week 8

10/15 4.4 The Distributive Property : 2,6,8,9,10,11
10/17 **Quiz #4 Sections 4.1-4.3.** 4.5: Arithmetic Properties and Mental Math : 2,4,7,8,10,14,16,17.

Week 9

10/22 4.6: Why Standard Multiplication Algorithm works: 1,4,6,10,11
10/24 5.1: Making Sense of Fraction Multiplication : 1,2,4,5,10,11,12,14,15,18

Week 10
10/29 6.1: Interpretations of Division: 1,2,4,6.
10/31 **Quiz #5 Sections 4.4-4.6 + 5.1**. 6.2: Fraction Division and Division with Remainder: 1,4,5,6,8.

Week 11
11/5 6.3: Why Standard Division Algorithm works: 2,3,4,5,8,11,19,20.
11/7 6.4: Partitive Division with Fractions:3,4,6,7,10,11.

Week 12
11/12 Quiz #6 Sections 6.1-6.4. Questions to review for Exam #2
11/14 **Exam 2 4.1-4.6, 5.1, 6.1-6.4**

Week 13
11/19 7.1: Ratio and Proportional Relationships: 5,6,7,8,9.
11/21 7.2: Proportional Reasoning with Multiplication and Division: 1, 3, 5, 6, 8, 19, 20, 21.

THANKSGIVING BREAK

Week 14

12/3 7-2 continued

12/5 Quiz 7.1 and 7.2 . Questions to review for Final Exam

Final Exam TBA _____