

MA 113 - STRUCTURE OF MATHEMATICS I: NUMBER SYSTEMS

READ THIS SYLLABUS CAREFULLY.
YOU ARE RESPONSIBLE FOR KNOWING THIS INFORMATION!

Prerequisite: MATH 101 (C- or higher) or Placement Examination

Course Description: MATH 113 is the first in a two-course sequence for Elementary, Early Childhood, Middle Level and Special Education certification candidates (MATH 113/MATH 213). Course content includes a problem solving approach to inductive reasoning, sets, numeration, number theory, integer properties and operations, and rational number properties. No credit is given to those with credit for MATH 366. It can be used to meet requirements of a major or minor in mathematics only for students seeking elementary, early childhood, middle level or special education certification. It is not recommended for use in meeting certification requirements for secondary school mathematics. No student is permitted to use both MATH 105 and 113 to satisfy the General Education requirements.

The major goals of this course are to:

- a. develop and use problem solving strategies
- b. develop number concepts and operations with extensive use of manipulatives and
- c. encourage mathematical discourse through written assignments and cooperative learning.

This course will teach you to think critically in mathematics and about mathematics education.

Instructor: Mj Terry

Phone: 860-647-8741

Office Hours: Tuesday and Thursday (Room 219) 3:30 – 5PM, or by appointment

E-Mail: MjTerry104@aol.com

Class Meeting Times: T & R MS - room 216 2 – 3:15

T & R MS - room 204 5:15 – 6:30

Attendance will be taken and counted

Dept Chair: Dr. Jeff McGowan

Textbook: Mathematics for Elementary School Teachers, 4th edition, by Tom Bassarear (Houghton Mifflin Company, 2005)
Mathematics for Elementary School Teachers (Explorations), 4th edition, by Tom Bassarear (Houghton Mifflin Company, 2005)

Note: The two books listed above are sold as a package at the bookstore. The package also includes manipulatives. (Pentominoes, 2-colored disks, Pattern Blocks, Tangrams, Base 10 blocks, ruler, 5 x 5 geoboard with bands)

Ct Board of Education:

http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320872&sdenav_gid=1757

Toolbox: You will need to have available tape, a few Baggies, protractor, a few paper clips, gluestick, markers (or crayons), stapler, dice and scissors. Please bring your toolbox to every class.

Disability Accommodations: Please contact me privately to discuss your specific needs if you believe you need course accommodations based on the impact of a disability, medical condition, or if you have emergency medical information to share. I will need a copy of the accommodation letter from Student Disability Services in order to arrange your class accommodations. Contact Student Disability Services, room 241, Copernicus Hall if you are not already registered with them. Student Disability Services maintains the confidential documentation of your disability and assists you in coordinating reasonable accommodations with your faculty.

Policy Statement on Academic Misconduct

All students are expected to demonstrate integrity in the completion of their coursework. Academic integrity means doing one's own work and giving proper credit to the work and ideas of others. It is the responsibility of each student to become familiar with what constitutes academic dishonesty and plagiarism and to avoid all forms of cheating and plagiarism. Students who engage in plagiarism and other forms of academic misconduct will face academic and possibly disciplinary consequences. Academic sanctions can range from a reduced grade for the assignment to a failing grade for the course. From a disciplinary standpoint, an Academic Misconduct Report may be filed and a Faculty Hearing Board may impose sanctions such as probation, suspension or expulsion.

Course Requirements: Attend and participate in class regularly, complete assignments, and take quizzes and tests as scheduled. All work to be handed in must be written neatly. I will ask for illegible work to be rewritten. Quizzes cannot be made up. If you know you will be absent, you may take a quiz early and hand in homework early. Missed tests must be made up by the next class meeting. A general rule for any college course is that you are expected to put in at least 2 hours of work outside of class for every hour in class. All electronic devices must be turned off before entering the classroom. If a cell phone rings during class, a percentage point will be deducted from your test average.

Attendance Policies:

- a. You are expected to attend every class. When you are teachers, you will expect your students to be present each day.

- b. In the case of an unavoidable absence, please notify me in advance of the date, or, if that is impossible, phone or e-mail me at the time of the absence.
- c. Attendance and class participation are part of your grade in this course. They are evaluated in this manner:

Three or fewer absences and enthusiastic class participation:	85% - 100%
Four or five absences and occasional class participation:	75% - 85%
Six to eight absences and little class participation:	50% - 70%
More than eight absences and no class participation:	0%

University Policies:

- a. You must take the final examination at the time specified in the course selection book.
- b. If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My telephone number and office hours are given above.
- c. In the event of a weather or other emergency curtailment or cancellation of classes, listen to WTIC (1080 AM), call 860-832-3333 for any messages, or visit the CCSU website.
- d. In the event that I am not in the classroom when class is scheduled to begin, you should wait a full 10 minutes before leaving the classroom.
- e. Students may withdraw from a course by completing a withdrawal form, available at the Enrollment Center in Willard Hall. During this period approvals for withdrawal are not required; however, it is strongly recommended that students consult with their academic advisors prior to deciding to withdraw. Cessation of attendance, notice to the instructor, or telephone calls to the Enrollment Center are not considered official notice of a student's intention to withdraw from the course. After the posted withdrawal date withdrawals are allowed only under extenuating circumstances and require approval of the course instructor, department chair and Dean of the School of Arts and Sciences.

Resources Available:

- a. If you need help, take advantage of my office hours. Do not wait until just before a quiz or test to do so.
- b. The Learning Center is located in Room 241 Copernicus. Free tutoring is available. A schedule of hours the Center is open will be posted soon after the beginning of the semester.
- c. Form a study group with other students in your section. Explaining solutions to homework exercises, investigations, and explorations to each other and preparing for quizzes and tests together are good ways to learn.
- d. A list of private tutors for hire is available in the math department office, Room 107 Marcus White, 832-2835.

Evaluation:

a. Attendance and class participation	10%
b. Homework	10%
c. Mathematician project	20%
e. Two tests	30%
f. Final examination	30%

(2 PM class) 12/16 2-4
(5:15 PM class) 12/14 5-7

Academic Integrity:

Academic integrity is the responsibility a student assumes for submitting academic work as his/her own. Cheating or plagiarism on any test, quiz, final exam, or assignment will result in a grade of zero for that work. Cheating or plagiarism is submitting someone else's work for one's own work. It is different from sharing work with others during class or on group projects.

Homework

Homework is an opportunity to practice applying concepts learned in class and to communicate mathematical thinking. How you present your homework is a reflection of how you think and work mathematically and your attitude towards mathematics. Here is a list of how I would like for you to complete and submit your homework this semester.

1. Do not submit any homework on paper torn from a spiral notebook unless the paper is perforated.
2. Put your name, page number and the due date in the upper right-hand corner of the paper.
3. Write neatly and legibly. Illegible homework will not be reviewed or graded.
4. When homework is on more than one sheet of paper, staple the sheets together.
5. Be sure to submit homework at the beginning of class the day it is due. Late homework is not accepted. If you cannot attend class, you may hand in homework ahead of time or have a friend bring your homework to class.

Math Project

Mathematician Biography

Research an under-represented mathematician's (or scientist's) life and contributions with an eye as to how you would integrate this person into a class lesson. You will need to be careful as some of their work is very technical, and can create a challenge when you try to integrate it into a grade appropriate lesson. You may want to start at a children's library, for suggestions of the mathematician or scientist. Do not simply reiterate something from the Internet, but

plan and explain how you will make this appropriate for an elementary (or middle school) classroom. Give a reason(s) why you choose this person, what grade level it will be appropriate for, a description of your lesson (including possible manipulatives), and what you will expect from the students as a final product (not simply a test or your observations). This is to be written as a narrative, not bullet answers to questions. (Historical background is **no more** than 40%)

Suggestions to include (in a narrative form)

Who is the mathematician that you researched? Why did you select them?

What did he/she do?

When were they born and where did they live?

Why has his/her work been important to the field of mathematics?

How did he/she make the discoveries?

Explain how your mathematician's major discovery or invention attributed to your impacted others.

Explain the discovery or invention in detail. Why do you want to bring that into a classroom?

How will you make it grade level appropriate?

Why did you choose this mathematician to discuss?

What did you find interesting about this mathematician's life or work?

How will you integrate this into a lesson(s)?

What would you use as an assessment for this assignment (not a quiz, nor simply your observation of their work)?

What are your resources?

How do your ideas for a lesson fit into the Model Curriculum set up by the CSDE? (Include the specific CSDE objective you are integrating into your lesson.)

Lesson	Date	Topic	In Class Work			Homework	
			Section	Explorations	Investigations	Readings Assignment	Written Exercises
1	8/31	Introductions Ct Model Math Curriculum Focal Points Obsolete Paper and Pencil Tasks Common Math beliefs Sandberg poem Equity Issues Big Ideas in Math		Cats and Canaries	1.1 (p. 8)	p. 1-17	Write an ad for a math partner Complete Cats and Canaries
2	9/2	Getting Comfortable with Math Problem Solving	1.1 1.2		1.2 (p. 15)	p. 17-43	Pascal's Triangle p. 26 - 27 #1, 9, 20, 22(a-d)
3	9/7	Patterns and Representations Reasoning and Proof	1.3-1.5	1.3 (3) p.4	1.3 (p. 18), 1.5 (p. 22), 1.8 (p. 32), 1.9 (p. 33)	p. 43-53	p. 28 - 29 #25, 28, 36. 40
4	9/9	Communication Connections	1.6, 1.7		1.14 (p. 46), 1.15 (p. 50), 2.1 (p. 63)	p. 61-78	p. 54 #1, 10(a - c), 14, 16
5	9/14	Sets	2.1	2.3 (3) p.6	2.3 (p. 68)	p. 78-99	p. 76-78 #3(a-b), 5, 13, 18
6	9/16	Algebraic Thinking - Functions	2.2		2.6 (p. 85), 2.7 (p. 87)	p. 78-99	p. 98 #17, 18, 21, 22
7	9/21	Algebraic Thinking - Functions	2.2	2.4 (1) p.27	2.8 (p. 89), 2.9(p. 90)	p. 100-115	p. 98 - 99 #16, 19, 29, 34
8	9/23	Numeration- Different # systems	2.3		2.10 (p. 90)	p. 100-115	p. 119-120 #2(a - c), 3, 5, 6
9	9/28	Numeration - Different # systems Test Review	2.3			Review p. 1-115	
10	9/30	Test 1	1.1-2.3			p. 123 - 145	p. 121 # 25, 28, 31, 32
11	10/5	Addition Mental Addition - estimation	3.1	2.9 p.47, 3.2 p. 54	3.1 (p. 129), 3.2 (p. 131)	p. 148 - 161	p. 151 #6, 9, 13, 16
12	10/7	Subtraction	3.2		3.9 (p. 152), Exercise 18 (p. 162)	p. 163 - 180	p. 166-167 #1, 5, 10, 15 (explain your thinking)

13	10/12	Multiplication Mental Multiplication	3.3	3.13 p.73	3.13 (p. 169), 3.16 (p. 178)	p. 184 - 201	p. 187 - 188 #15, 19, 32, 35
14	10/14	Division- Divisibility Rules	3.4 - 4.1		3.20 (p. 194), 3.21 (p. 195)	p. 211 - 226	p. 209 #30, 31, 33, 42
15	10/19				4.5 (p. 221), 4.6 (p. 223)	p. 229 - 236	p. 229 - 230 #3, 11, 16, 22
16	10/21	Prime and Composite Numbers	4.2	Krypto	4.8 (p. 230) 4.12 (p. 245)	p. 238 - 249	p. 239 #4 (a - d), 5, 7, 11a, 16
17	10/26	Greatest Common Factor Least Common Multiple Test Review	4.3			Review p. 123 - 249	
18	11/28	Test 2	3.1- 4.3			p. 254 - 263	p. 252 #1 (a, b), 2, 3 (a, b), 7, 11, 16
19	11/2	Integers	5.1		5.1 (p.259), 5.2 (p.261)	p. 266 - 278	p. 265 - 266 #2, 4, 6, 20
20	11/4	Fractions - Rational numbers	5.2		5.3 (p 259), 5.4 (p. 269), 5.7 (p. 276)	p. 266 - 278	p. 281 - 282 #1(a-d), 3, 4, 9, 14, 23
21	11/9	Fractions - Rational numbers	5.2		5.10 (p. 286)	p. 281 - 301	p. 283 - 284 #30, 33, 34, 35
22	11/11	Fractional - Operations	5.3		5.11 (p. 289)	p. 281 - 301	p. 303 - 304 #3(a, b), 6, 7(a, b), 12
23	11/16	Fractions - Operations	5.3		5.12 (p. 293), 5.23 (p. 313)	p. 301- 318	p. 304 - 305 #16, 20, 36, Math Project due
24	11/18	Decimal and Exponents	5.4	Ordering Decimals		p. 318 - 329	p. 331 #5, 12, 20, 23
25	11/23	Square Roots and Real Numbers	5.4			p. 335 - 351	p. 332 - 333 #28, 34, 45, 47
26	12/2	Ratio and Proportional Reasoning	6.1		6.2 (p. 341)	p. 335 - 351	p. 354 - 355 #4, 5, 15, 22
29	12/7	Review for Final Exam	1.1 – 6.2			Review p. 123 - 370	
	12/9						
30		Final - (2:00 PM class) 12/16 2-4 (5:15 PM class) 12/14 5-7					