

## MATH 2008-03

### Foundations of Numbers and Operations

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**Instructor:** Dr. Kyunghee Moon

**Contact Information:**

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**Office:** Boyd 216

**Office hours:** 12:30-3:00 (T & Th at Carrollton campus)

**Textbook:** *A Problem solving approach to mathematics for elementary school teachers*, 12<sup>th</sup> Edition. Pearson Addison-Wesley: Boston, MA. (by Billstein, R., Libeskind, S., & Lott, J., 2015).

**Goals and Objectives of the Course** include, but not limited to,

- Apply and adapt a variety of appropriate strategies to solve problems.
- Identify how a sequence (in both numeric forms and in diagrams) grows and find the general term of sequence using the pattern in the sequence. Explain how Gauss method works and generalize the method to find the sum of terms in a sequence with a pattern.
- Explain how sets and whole numbers are connected.
- Explain and be able to use quantifiers in mathematical statements and conditional statements and their implication statements.
- Construct numeric systems for various bases and explain the role of place values and zero in the systems. Be able to convert back and forth numbers in base 10 to numbers in base other than 10.
- Identify and explain various strategies and algorithms for number operations (addition, subtraction, multiplication, and division) and use those in calculation.
- Be able to model operations using various representations (visual and verbal) and explain how multiple representations are connected.
- Explain how mathematical properties, such as the distributive, commutative, and associative properties, are embedded in various strategies in operations and use the properties efficiently in problem solving.
- Define and find multiples and factors including the greatest common divisor (GCD) and the least common multiple (LCM). Be able to explain how prime factorizations of numbers are associated with the GCD and LCM.
- State the divisibility rules and explain why those rules work. Apply the rules to determine if numbers are divisible by certain numbers and to list numbers that satisfy the rules.
- Explain and compute integer operations using various models.

### **Attendance and Classroom Rules:**

- Students must be **punctual** and **always** attend class. There could be unforeseen emergencies that do come up. However, anyone missing classes **FIVE times or more** during the semester will not receive a credit for the course. Medical excuses are accepted only with documentation.
- Attendance will be checked at the beginning of each class. Anyone who is not present at the time will be recorded as absence. If students are late, they should report to the instructor at the end of the class to be marked as tardiness. The first two tardiness combined will be considered as one absence. After two tardiness, each tardiness will be considered as one absence.
- Students who disrupt the class for any reason will be escorted to outside of the classroom, disallowed to return for the day, and marked absent.

**Use of Electronics:** Students cannot use any electrical device in the classroom, including calculators. Students who do not abide by this rule will be escorted to outside of the classroom and disallowed to return for the day.

**Grading:** The final grade in the course will be based on the performance on a writing assignment (5 points), homework (10 points), three mid-term exams (60 points total), and a final exam (25 points).

- There will a writing assignment during the course. The details will be announced later.
- Homework will be assigned regularly and due two class days prior to each midterm. Homework grades will be based on the organization (numbers should be in order), completeness, and correctness. Homework must include **ALL THE NECESSARY WORK LEADING TO THE ANSWERS**. Late homework won't be accepted.

#### Homework Grading Rubric

4 Points: Students' own work with more than 75% correctness and completeness  
3 Points: Students' own work between 50% to 75% correctness and completeness  
2 Point: Students' own work between 25% to 50% correctness and completeness  
1 Point: Students' own work between 0% to 25% correctness and completeness  
0 Point: Copy of the textbook answer keys or other students' work (Penalty for wasting my time and effort)

**Note: A written copy of someone's work will results in 0 point for both the original and the copy.**

- There won't be makeup exams provided for midterms in any case. If a student misses an exam due to her/his own medical emergency that can be documented, the student's midterm score will be determined by her/his score on the final exam that is relevant to the midterm materials.
- If a student misses the final exam, the final exam score will be 0, with no exception.

<u>Grade Components and Dates</u>		<u>Final Course Grade</u>	
Writing	5%	A	90-100
Midterm 1	20% (Sep. 19 <sup>th</sup> )	B	80-89
Midterm 2	20% (Oct. 24 <sup>th</sup> )	C	70-79
Midterm 3	20% (Nov. 21 <sup>st</sup> )	D	60-69
Homework	10%	F	Below 60
Final Exam	25% (Dec. 10 <sup>th</sup> at 11:00-1:00pm)		

### Common Language Link

<https://www.westga.edu/administration/vpaa/common-language-course-syllabi.php>

**Conferences:** Students are encouraged to seek additional help in case they have difficulties understanding materials. Students may drop by the instructor's office during office hours or get help from the Math Tutoring Center (located on the second floor of Boyd Building). Students may also communicate with the instructor through emails.

**Academic Dishonesty:** Any instance of academic dishonesty will result in a failing grade for this course and may result in additional disciplinary actions.

### Tentative Schedule

Week	Materials
1	Textbook-Chs. 1.1 & 1.2
2 & 3	Textbook-Chs. 2.1, 2.2, & 2.3
4, 5 & 6	Textbook-Chs. 3.1, 3.2 & 3.4
7 & 8	Textbook-Chs. 3.3 & 3.5
9, 10 & 11	Textbook-Chs. 4.1, 4.2 & 4.3
12	Textbook-Chs. 5.1 & 5.2
13 & 14	Textbook-Chs. 6.1, 6.2, 6.3 & 6.4
15	Review
16	Final Exam