

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS
NUMBER CONCEPTS FOR TEACHERS
MATH 1410

Class Hours: 3.0

Credit Hours: 3.0

Laboratory Hours: 0.0

Date Revised: Fall 2016

Catalog Course Description:

Topics include problem solving, numeration systems, integers, elementary number theory and rational numbers with an emphasis on mathematical understanding necessary to teach effectively.

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

High school algebra I, algebra II, geometry and ACT math score of at least 19 or equivalent math placement score or successful completion of MATH 0010 or MATH 0030 or MATH 0530 as required.

Textbook(s) and Other Reference Materials Basic to the Course:

Textbook:

Judith Sowder, Larry Sowder and Susan Nickerson. *Reconceptualizing Mathematics for Elementary School Teachers*, 2nd edition. WH Freeman and Company, NY.

Required Supplies:

Praxis: Core Academic Skills for Educators (5712, 5722, 5732), Learning Express, LLC, 2014.

Personal Equipment:

Scientific calculator with fractional capabilities is required. A graphing calculator such as the TI-84 or TI-84 Plus is recommended.

I. Learning Activities:

Week Learning Activities

1. Introduction, Problem Solving Strategies
2. Sets, Algebraic Thinking
3. Numeration Systems (including other bases), Review, Test One
4. Modeling Whole Number Operations of Addition and Subtraction in Multiple Bases
5. Modeling Whole Number Operations of Multiplication and Division in Multiple Bases
6. Algorithms, Mental Math, and Estimation for Whole Number Operations
7. Algorithms in Other Bases, Review, Test Two

8. Primes, Composites, and Tests for Divisibility
9. Number Theory, Factors, Multiples
10. Fractions and Rational Numbers, Algorithms, Estimation
11. Fractions and Decimals: Addition and Subtraction
12. Fractions and Decimals: Multiplication and Division
13. Ratios, Proportions and Percents
14. Review, Test Three, Review for Final
15. Comprehensive Final Exam

II. Course Goals*:

The course will:

- A. Build skills to master critical thinking. VI.2
- B. Build the skills to construct, manipulate and discuss mathematical systems. VI.1, 4
- C. Enhance the student's knowledge of the real number system. VI.1, 3, 4
- D. Enhance effective use of mathematical reasoning in order to read, comprehend and construct mathematical arguments. VI.1, 2

*Roman numerals after course goals reference the General Education Goals of the Mathematics program.

III. Expected Learning Outcomes*:

Students will be able to:

1. Utilize both inductive and deductive reasoning. A, D
2. Utilize and manipulate the real number system. B, C, D
3. Master and explain various problem-solving strategies. A, B, D
4. Explain and model algorithms with different base numerals. C
5. Demonstrate knowledge of commutative, associative and distributive laws. A, B, D
6. Define natural numbers, whole numbers, rational numbers, irrational numbers, and real numbers. A, B, C, D
7. Demonstrate knowledge of division algorithm and divisibility tests. B, C, D

8. Define prime numbers, composite numbers, greatest common divisor and least common multiple. B, C
9. Compute prime factorization of a number and use in applications. C
10. Apply modeling tools to demonstrate mathematical ideas and processes. A, B
11. Demonstrate a greater understanding and appreciation of mathematics and its applications to other disciplines. A

*Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests, quizzes, homework, portfolio, projects and/or a comprehensive final exam. A minimum of three major tests (in addition to the final) is recommended.

B. Laboratory Expectations:

0% of grade or instructor discretion

C. Field Work:

N/A

D. Other Evaluation Methods:

Excessive absences may lower the final grade.

E. Grading Scale:

93-100	A
88-92	B+
83-87	B
78-82	C+
70-77	C
60-69	D
Below 60	F

V. Policies:

Attendance Policy:

Pellissippi State Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with approval of the vice president of Academic Affairs may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course

was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to, unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to, paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including outline or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course.

[Disability Services](http://www.pstcc.edu/sswd/) (<http://www.pstcc.edu/sswd/>) may be contacted via [email](#) or by visiting Alexander 130

Other Policies:

Make Up Work: Instructor discretion about make-up tests and/or assignments.

Cell Phones: Cell phones are to be either turned off or put on vibration mode while in class. Instructor discretion as to penalty.