

HOSTOS COMMUNITY COLLEGE
DEPARTMENT OF MATHEMATICS

MAT 100 Introduction to College Mathematics I

CREDIT HOURS: 3.0

EQUATED HOURS: 3.0

CLASS HOURS: 3.0

PREREQUISITE: Passing score on the COMPASS/CMAT

REQUIRED TEXTS: Setek, William. Fundamentals of Mathematics, Prentice Hall
10th Edition, 2005

DESCRIPTION: This course provides skills in finite mathematics. Topics: set theory, symbolic logic, systems of numeration, and the metric system.

EXAMINATIONS: A minimum of four partial tests and a comprehensive final examination.

GRADES: A, A⁻, B⁺, B, B⁻, C⁺, C, D, I, F.

MAT 100

COURSE OUTLINE

- I. SEQUENCES OF REAL NUMBERS
 1. Arithmetical Progressions
 2. Multi-level Arithmetical Progressions
 3. Geometrical Progression
 4. Harmonic Progressions

- II. BASIC DEFINITIONS AND PROPERTIES OF SET:
 1. Define set, subset, proper subset, empty set, universal set
 2. Describe sets by rule and roster
 3. Define complement of a set
 4. Find the number of subsets that can be formed from an indefinite set
 5. Identify equivalent sets
 6. Classify sets as finite or infinite

- III. RELATIONSHIPS BETWEEN SETS:
 1. Define and find the intersection of sets
 2. Define and find the union of sets

- IV. SETS OF POINTS:
 1. Draw Venn diagrams illustrating the union of sets
 2. Draw Venn diagrams illustrating the intersection of sets
 3. Use Venn diagrams to show that two sets are equal

- V. BASIC DEFINITIONS AND PROPERTIES OF SETS:
 1. Classify numbers as ordinal, or cardinal
 2. Construct a one-to-one correspondence between the elements of two sets

- VI. LOGICAL STATEMENTS:
 1. Translate English statements into symbolic form
 2. Write the negation, conjunction and disjunction of given statements
 3. Write the converse, inverse and contrapositive of given statements

- VII. TRUTH TABLE:
 1. Give a truth value to a given compound statement
 2. State whether or not two given statements are equivalent.
 2. Determine whether or not a given statement is a tautology.

- VIII. PROBABILITY
 1. Find the probability of an event such as: Rolling a dice, Picking a card from a random deck or tossing a coin.
 2. Describe the sample space of a probability experiment.
 3. Find the probability of two events occurring that are mutually exclusive
 4. Find the probability of two events occurring that are not mutually exclusive.

- IX. NUMBERS AND NUMERALS:
1. Define number and numeral
 2. Write Roman (Egyptian) numerals
 3. Compute in the Roman (Egyptian) system of numeration
- X. PLACE VALUE IN THE DECIMAL SYSTEM:
1. Write numbers in expanded notation
 2. Write numbers in the decimal notation
- XI. OTHER BASES:
1. Discover other systems of notation
 2. Write numbers in other bases
 3. Translate numbers from base 10 to base x
 4. Translate numbers from base x to base 10
- XII. OPERATION IN OTHER BASES:
1. Perform addition in bases 2, 5 and 12
 2. Perform addition in bases 2, 5 and 12
 3. Perform multiplication in bases 2, 5 and 12
 4. Perform division in bases 2, 5 and 12
- XIII. MODULAR ARITHMETIC:
1. Add and subtract on a 12-hour clock
 2. Multiply and divide on a 12-hour clock
 3. Compute in arithmetic modulo 5
 4. Compute in arithmetic modulo 10
- XIV. FACTORIZATION AND PRIME NUMBERS:
1. Find the factors of any counting numbers
 2. Distinguish between prime and composite number
 3. Find the prime factorization of any counting number
- XV. THE METRIC SYSTEM:
1. Units of measure in the metric system
 2. Conversion of measurements within the metric system
 3. Conversion between the Metric and English systems