COURSE NUMBER: MATH 1332

COURSE TITLE: Contemporary Mathematics (Quantitative Reasoning)

CREDIT HOURS: 3  LECTURE HOURS: 3  LAB HOURS: 0

ASSESSMENTS: Prior to enrolling in this course, the student must demonstrate eligibility to enroll in the following: MATH 1332, or higher.

PREREQUISITE: Meet TSI college-readiness standard for Mathematics; or equivalent.

COREQUISITE: None

COURSE DESCRIPTION: Intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. Topics include introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered. Additionally, this course is NOT intended to prepare students for calculus, business, or engineering courses.

TEXTBOOK: Mathematical Ideas; Miller, Heeren & Hornsby; 13th edition, Pearson

SUPPLIES: Graphing calculator required

STUDENT LEARNING OUTCOMES:
Upon completion of this course the students should be able to do the following:

1. Apply the language and notation of sets. (Communication Skills)
2. Determine the validity of an argument or statement and provide mathematical evidence. (Critical Thinking)
4. Demonstrate fundamental probability/counting techniques and apply those techniques to solve problems. (Empirical/Quantitative Skills)
5. Interpret and analyze various representations of data. (Communication Skills, Critical Thinking)
6. Demonstrate the ability to choose and analyze mathematical models to solve problems from real-world settings, including, but not limited to, personal finance, health literacy, and civic engagement. (Critical Thinking, Empirical/Quantitative Skills)

COURSE REQUIREMENTS: Completion of required exams and homework.
COURSE FORMAT: Lecture and guided practice.

METHOD OF EVALUATION: A minimum of four proctored exams and a proctored comprehensive final exam will be given. Homework and/or quizzes may be used in place of one exam or in addition to exams. The weight of each of these components of evaluation will be specified in the individual instructor’s addendum to this syllabus. All out-of-class course credit, including home assignments, service-learning, etc. may not exceed 25% of the total course grade; thus, at least 75% of a student’s grade must consist of proctored exams, and no student may retake any of these exams.

ATTENDANCE POLICY: Attendance is expected of all students. If a student is unable to attend, it is his/her responsibility to contact the instructor to obtain assignments. Please see the schedule of classes for the last day to withdraw from the course with a grade of W.

ADA STATEMENT: Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to contact the ACCESS Office, SCC-D140 or 972.881.5898, (V/TDD 972.881.5950) to arrange for appropriate accommodations. See the current Collin student Handbook for additional information.

ACADEMIC ETHICS: Please see section 7-2.2 of the Collin Student Handbook. Contact the Dean of Students at 972.881.5771 for the student disciplinary process and procedures.

COURSE CONTENT:

MODULE 1: Introduction to Functions and Graphs (Sections 8.4 – 8.6)
The student will be able to:
1. Determine whether a relation is a function.
2. Find the domain and range of a function.
3. Use function notation to evaluate functions.
4. Graph linear, quadratic and exponential functions.
5. Use functions to model linear, quadratic and exponential applications.
6. Write the equation of a line in slope-intercept form.
7. Find the vertex of a quadratic function and determine whether the vertex is a maximum or a minimum.

MODULE 2: Set Theory (Chapter 2)
The student will be able to:
1. Identify the sets of real numbers, integers, whole numbers, rational numbers and irrational numbers.
2. Determine the cardinality of a set.
3. Determine the intersection and union of two or more sets.
4. Determine the complement, a subset, and a proper subset of a set.
5. Use Venn Diagrams and other symbols to display set operations.
6. Use set operations to analyze data.
MODULE 3: Logic (Chapter 3)
The student will be able to:
1. Express word statements and their negations using logic symbols.
2. Form negations of quantified, conditional, and compound statements.
3. Construct truth tables for negation, conditional, biconditional, disjunction, and conjunction statements and use them to analyze arguments.
4. Decide if two statements are equivalent.
5. Given a conditional statement, construct its contrapositive, inverse, and converse.
6. Analyze the validity of arguments using truth tables or Euler diagrams.

MODULE 4: Mathematics of Finance (Chapter 13)
The student will be able to:
1. Compute simple interest.
2. Find the total amount due on a loan using simple interest.
3. Compute the present and future value using compound interest.
4. Find the effective annual yield.
5. Compute the regular payments necessary to amortize a loan.
6. Create an amortization schedule.
7. Use the average daily balance method to compute finance charges for revolving credit.
8. Understand terms and formulas used in calculating repayments for installment loans, revolving loans and mortgages.
9. Understand terms and use formulas for investments.

MODULE 5: Introduction to Probability (Chapter 11 – omit 11.4)
The student will be able to:
1. Compute the probability of a single event.
2. Construct the sample space for a probability experiment.
3. Compute the probability of the complement of an event.
4. Compute the probability of the union and intersection of events.
5. Compute conditional probability.
6. Identify when events are mutually exclusive and when they are independent.
7. Compute expected value.

MODULE 6: Data Description (Chapter 12)
The student will be able to:
1. Construct and interpret visual displays of given data.
2. Find mean, median, and mode for given data.
3. Find range and standard deviation for given data.
4. Compute z-scores and quartiles.
5. Demonstrate knowledge of percentiles.
6. Compute probabilities using the normal distribution.
7. Recognize and apply characteristics of normal distributions.