

CONTEMPORARY MATH I

MAT172

(3 credits)

Course Description: This course presents varied mathematical topics which have application in contemporary society. Topics include number theory (divisibility, Fermat's Theorem, characterization of primes, Diophantine equations), mathematical systems (base n and modular arithmetic, groups, rings, fields), logic (simple, compound, and complex-compound statements, conditionals, symbolic logic, truth tables), and patterns and symmetries (Fibonacci sequence, Golden Ratio, natural and artistic illustrations, fractals). This course encourages students to interpret, analyze, and evaluate from a mathematical perspective.

Instructor:

Office:

Phone:

e-mail:

Office Hours: Posted at Office + additional hours *by appointment*

Prerequisite: MAT095 (Fundamentals of Algebra) or equivalent

Required Text: Fundamentals of Mathematics (9th ed.) – Setek & Gallo
(Prentice Hall, 2002)

Teaching Procedures & Objectives: You will meet for two 75 minutes classes per week in the classroom. Course content will be presented in a variety of instructional modes including lecture, workshops, discussions, demonstrations, homework assignments, and required reading. *These formats depend heavily upon students' regular attendance and frequent interaction with the instructor and fellow students.* Learning objectives are indicated at the beginning of each chapter of the text. A list will be provided by the instructor upon request.

Attendance: You are expected to attend *all* class meetings *on time*. You are responsible for all material presented in class, even if you are absent. In the event of an extended absence (such as for serious illness), you should contact the Dean of Student Affairs. Any arrangements for make-up work are negotiated with the instructor on an individual basis.

Assignments: It is essential that you make yourself an *active participant* in the learning process. The assignment sheets list problems and activities for each unit. **READ the material, DO the problems or activities, and EXPLAIN answers completely in acceptable written format.** (The instructor reserves the right to refuse assignments that are not submitted in accord with Guidelines attached to this policy). **All assignments will be collected and graded.** ($\checkmark + = 95$, $\checkmark = 85$, $\checkmark - = 75$). Assignments will not be accepted after the due date of the corresponding Unit Test. For each hour of class

meeting, you should expect to spend at least two hours outside of class preparing assigned work.

Assistance: You will have the assistance of your instructor during class and office hours (posted and by appointment). Students are encouraged to form study groups and/or to work cooperatively on homework and classroom assignments.

Assessment: For each unit, you will complete a series of short in-class quizzes (**NO make-ups allowed**) and a take-home exam containing longer thought-provoking problems. Students must submit the take-home exam **on time** (10 points *per day* will be deducted for late submissions), with **work clearly documented in acceptable format**. The due dates appear on the Lecture Schedule handout.

Final Exam: The Final Exam is in the form of a Take-Home. You will complete a total of **10 problems from 16 proposed** (4 per unit). The instructor will designate 8 problems (2 per unit) from which at least 6 must be completed. You may choose from any remaining problems, **provided that you complete at least 1 problem from each Unit**. Problems for the Final Exam will be distributed about 2 weeks before the due date of the Final Exam (which appears on the Lecture Schedule).

Grading: All your work for the course contributes to your course grade as follows:

Homework Assignments	25%
In-class Quizzes	15%
Take-Home Unit Tests	35%
Final Exam	20%

Course grades will be assigned in accord with the College Catalog.

Honors Option: Students may elect the Honors Option through the BHCC Honors Program. The Honors Option is available at any time, but it is recommended that arrangements be made during the first 4 weeks of the semester. Consult with your instructor about the procedure.

Miscellany: This course is **not self-paced**. An IP grade is available only under extraordinary circumstances. In any case, the student must have demonstrated a good attitude and motivation paired with satisfactory home preparation and class participation.

“Translation” of Course Description

Contemporary Math I is a 3-credit college-level mathematics course which introduces students to 4 topics which are widely applied in contemporary life.

The unit on **Number Theory** looks at the properties of specific classes of numbers, especially composites. For example, why is every 6-digit palindrome divisible by 11? What is the relationship between the greatest common divisor and the least common multiple of two numbers?

The unit on **Mathematical Systems** looks at the structure of arithmetic and algebra. What mathematical properties can be extended seemingly non-mathematical situations? What are some different ways that numbers are represented?

The unit on **Patterns and Symmetry** looks at examples of number sequences, patterns in geometric figures, and other special patterns exhibited in art, music, and nature.

The unit on **Logic** concerns itself with deduction and the structure of arguments. What makes an argument valid or invalid?