

**COLLIN COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS**

COURSE NUMBER: MATH 1370

COURSE TITLE: Introduction to the History of Mathematics

CREDIT HRS: 3 **LECTURE HRS:** 3 **LAB HRS:** 1

PREREQUISITE: None

TEXTBOOK: An Introduction to the History of Mathematics, Howard Eves

SUPPLIES: None

COURSE DESCRIPTION:

A study of the development of mathematics from ancient to modern times through the exploration of mathematical problems and techniques, the study of famous mathematicians, and the study of the relationship between mathematics and the societies and cultures in which it developed. Lab required.

COURSE LEARNING OBJECTIVES:

Upon completion of this course, students will have developed an understanding of the relationship between modern mathematics and its historical roots.

COURSE REQUIREMENTS:

Attending lectures, completing assignments and projects, completing required exams, completing labs.

COURSE FORMAT:

Lecture, lab and guided practice

METHOD OF EVALUATION:

A minimum of four written exams and a comprehensive final exam. 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 take-home exams, 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 exams given in the class or testing center, and no student may retake any of these exams.

ADA STATEMENT

It is the policy of Collin County Community College to provide reasonable and appropriate accommodations for individuals with documented disabilities. This college will adhere to all applicable federal and state laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the responsibility of the student to contact the ACCESS office located in room G200 at the Spring Creek Campus (972)881-5898 or TDD(972)881-5950, in a timely manner if he/she desires to arrange for accommodations.

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.

Religious Holy Days: In accordance with section 51.911 of the Texas Education Code, the college will allow a student who is absent from class for the observance of a religious holy day to take an examination or complete an assignment scheduled for that day within a reasonable time. A copy of the state rules and procedures regarding holy days and the form for notification of absence from each class under this provision are available from the Admissions and Records Office.

COURSE REPEAT POLICY:

All students may repeat this course only once after receiving a grade, including W. For example students who have taken this course twice have to choose a different course to take after two trials.

ACADEMIC ETHICS:

The college may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission of material as one's own work that is not one's own. Scholastic dishonesty may involve one or more of the following acts: cheating, plagiarism, collusion, and/or falsifying academic records.

Cheating is willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, using someone else's work for assignments as if it were one's own, copying computer disks or files, and any other dishonest means of attempting to fulfill the requirements of a course.

Plagiarism is the use of an author's words or ideas as if they were one's own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation. Contact Dean of Students at 972.881.5771 for the student disciplinary process and procedures or consult the CCCCD Student Handbook.

SPECIFIC REQUIREMENTS/COURSE CONTENT:

MODULE 1: NUMERAL SYSTEMS

The student will be able to:

1. Describe the development of counting and the concept of number in primitive societies.
2. Describe various number systems including additive, multiplicative, ciphered and positional systems.
3. Write representations of numbers in Egyptian, Babylonian, Chinese, Greek, Mayan, and Roman systems.
4. Describe the birth of the Hindu-Arabic system
5. Perform computations in arbitrary bases.

MODULE 2: BABYLONIAN AND EGYPTIAN MATHEMATICS

The student will be able to:

1. Describe the development of algebra and geometry in Babylonian and Egyptian cultures.
2. Describe the importance and content of early mathematical texts such as Plimpton 322, the Rhind Papyrus, and the Moscow Papyrus.
3. Perform computing techniques including unit fractions, duplation and mediation, method of false position, and Babylonian solution to quadratic equations.

MODULE 3: PYTHAGOREAN MATHEMATICS

The student will be able to:

1. Describe the birth of demonstrative math.
2. Describe the importance of the philosophy and arithmetic of the Pythagoreans.
3. Prove simple algebraic identities through the use of geometric algebra.

MODULE 4: DUPLICATION, TRISECTION, AND QUADRATURE

The student will be able to:

1. Describe the 3 famous problems of antiquity.
2. Describe the history of π .

MODULE 5: EUCLID AND THE ELEMENTS

The student will be able to:

1. Describe the contents and importance of The Elements.
2. Find the greatest common divisor of 2 positive integers by using the Euclidian algorithm.
3. Understand the concept of mathematical proof.
4. Describe various proofs of the Pythagorean Theorem.
5. Perform Euclidian constructions with compass and straightedge.

MODULE 6: GREEK MATHEMATICS AFTER EUCLID

The student will be able to:

1. Describe the contributions of Archimedes, Eratosthenes, Ptolemy, and Diophantus.

2. Solve early Greek math problems.

MODULE 7: CHINESE, HINDU, AND ARABIC MATHEMATICS

The student will be able to:

1. Solve problems from Chinese mathematics.
2. Describe the contributions of Hindu and Arabic mathematics.
3. Solve early Hindu problems including indeterminate equations and solution of quadratic equations.

MODULE 8: EUROPEAN MATHEMATICS, 500 TO 1600

The student will be able to:

1. Describe the mathematics of the Middle Ages
2. Describe the contributions of Fibonacci, and perform computations with the Fibonacci sequence.
3. Describe the beginning of algebraic symbolism.
4. Solve problems found in early European mathematics, including Gelosia and Galley methods.
5. Solve cubic equations.
6. Describe the relationship of Renaissance math to art, music, and the sciences.

MODULE 9: THE DAWN OF MODERN MATHEMATICS

The student will be able to:

1. Describe the contributions of Napier and logarithms.
2. Perform computations with Napier's rods.
3. Perform computations with tables of logarithms and slide rules.

MODULE 10: ANALYTIC GEOMETRY AND OTHER PRECALCULUS DEVELOPMENTS

The student will be able to:

1. Describe the contributions of Descartes to analytic geometry.
2. Describe the history of trigonometry.
3. Describe the historical development of negative and complex numbers.

MODULE 11: THE CALCULUS

The student will be able to:

1. Describe the 2 main branches of calculus and their historical development.
2. Describe the contributions of Newton, Leibniz, Bernoulli, and Euler.

MODULE 12: MODERN DEVELOPMENTS

The student will be able to:

1. Describe modern advances in mathematics including Non-Euclidian Geometry, the solution of Fermat's Last Theorem, and the birth of computers.

2. Describe the contributions of women mathematicians including Hypatia, Agnesi, Kovalevsky, Germain, and Noether.

Revised May 2006