MATH 100 – Survey of Mathematical Ideas – SYLLABUS

Department of Mathematics

Millersville University

Description

A liberal arts course for students who will not be scheduling a technical/professional math course. A survey of mathematics important to the history of Western civilization and to the modern world. Introductory modules covered usually include number theory, geometry, topology, probability, statistics, graph theory, consumer mathematics and set theory. (3 credits)

This course may be taken for general education credit (G2 for non-math and non-science majors) . Only one of Math 100, 102, 107, and 108 may be taken for general education credit.

Prerequisites

Math 090 with a grade of C- or higher or math placement testing/evaluation before registration.

Course Objectives

By the conclusion of this course the successful student will be able to:

- Identify and apply appropriate problem-solving strategies.

- Analyze the validity of an argument.

- Count and do arithmetic in ancient Egyptian, and other numeration systems.

- Count and do arithmetic in numeration systems with arbitrary bases.

- Code and decode numeric and alphanumeric data in binary.

- Understand the basic principles of number theory and properties of the Fibonacci sequence.

- Apply the principles of present and future value of money to situations involving investment and credit.

- Understand the time value of money, principles of borrowing, lending, and investing.

- Apply counting principles.

- Understand the basic principles of probability and be able to compute probabilities.

- Conduct elections and apportionments by various methods and understand their limitations.

Assessment

Assessment of student achievement of the course objectives will vary from one instructor to another. Typical assessment will be made through work in class, homework, and examinations.

Use of Technology

This course may be offered in a face-to-face or fully online format, and in the online format may use a mixture of synchronous and asynchronous delivery methods. Learning management system content tools, online homework systems, assignment tools, and/or discussion features may be used for presenting material, giving assignments, taking exams, and discussing course material asynchronously. Video conferencing tools will be used for synchronous discussion sessions with the instructor and peers.

Topics

Topics covered during this class may include:

• The Art of Problem Solving

• The Basic Concepts of Set Theory

• Introduction to Logic

• Numeration and Mathematical Systems

• Number Theory

• Personal Financial Management

• Graph Theory

• Voting and Apportionment

• Counting Methods

• Probability