

Alconbury High School

Course Name and Number

Discrete Mathematics: MAZ 501

Course Description

This discrete mathematics course by design shows a different view of mathematics than as seen in traditional mathematics courses. It is an applications driven course that is based upon the study of events that occur in small, or discrete, chunks. Discrete concepts are used extensively in business, industry, government, and the digital world. The major areas of study are counting and probability, graph theory, the mathematics of social choice (voting and fair division), and coding and encryption. Some of the questions investigated in discrete math are: What does a bar code mean? What is the most efficient way a delivery truck can visit ten destinations? Should you buy a lottery ticket? Probability applications include predicting outcomes using combinations, permutations, and counting principles. Mathematics of social choice investigates election theory and fair division. The graph theory component is comprised of the following: (1) graphs and directed graphs-shortest paths and graph coloring; (2) various trees; and (3) circuits and networks. The role of coding and encryption in the digital world will be investigated. The concept of recursion is a strategy embedded throughout discrete studies. Concepts will be explored and simulated using a variety of technology tools.

Text

Freeman: *Discrete Mathematics Through Applications, Second Edition*: Copyright, 1994 and Freeman: *For All Practical Purposes, 6th Edition*: Copyright, 2003.

Teacher Name

Mr. B

Contact Information

E-Mail: Math.MrB@eu.dodea.edu

Location

Room 3, bottom floor of the Main Building.

Philosophy

I expect every student to give 100% effort. Likewise, each student should expect the same from me.

Materials

(Students need to have the necessary materials in class everyday the class meets. This includes their textbook.)

3-ring binder

Notebook paper

Pencils

A TI-83 Plus Graphing calculator will be issued to each student.

If students plan on continuing their education in mathematics after this course, then having their own personal graphing calculator would be a great investment.

Grading Policy

Homework/ Class work: 50%

Quizzes: 20% (Between 4 to 6 per quarter).

Tests: 30% (2 to 3 per quarter).

DoDEA Grading Scale

90-100 = A

80-89 = B

70-79 = C

60-69 = D

59 or below = F

Assessment

Many evaluative processes will be used to assess students' written and oral work. These include multiple-choice, short answer, discussions, homework, projects, journal essays, and class presentations. Testing formats will include restricted-time written tests/quizzes as well as take home tests/quizzes. A review of all concepts from the unit will be given prior to each test. Tests will be announced at least two days in advance.

Homework

Homework is an important key in understanding Mathematics. Sometimes students will have time in class to practice the concepts taught; however, it is extremely important that they practice outside of class as well. This is the reason why homework will be assigned every time the class meets. Students are expected to complete their HW to the best of their ability prior to the next class period. Class work/ Homework may be graded in the following ways:

- 1) Homework check to see if students did their HW.
- 2) Random problems may be checked for student understanding.
- 3) Random problems may be checked for accuracy.

Late Work Policy

Students may turn in late work the next day that the class meets after the assignment was actually due; however, the highest grade a student can earn for late work is 50%. Late work is not to be confused with make up work, which is for excused absences such as illness, school activities, etc.

Tutoring/Extra Help

Extra help is available during seminar and during lunch. Passes need to be obtained by students prior to their help session.

Classroom Management

Outlined in the “Behavior Expectations” handout, which is attached. Needs to be signed by both the student and the parent/legal guardian and then returned.

Content Outline**Semester 1:**

Chapter 1: Election Theory

Chapter 2: Fair Division

Chapter 3: Matrix Operations and Applications

Chapter 4: Graphs and Their Applications

Chapter 5: More Graphs, Sub graphs, and Trees

Semester 2:

Chapter 6: Counting and Probability

Chapter 7: Matrices Revisited

* Chapter 9: Identification Numbers

* Chapter 10: Transmitting Information

* Chapter 11: The Internet, the Web, and Logic

* These chapters are from the supplemental text, “*For All Practical Purposes, 6th Edition*”, which will be given to the students during the second semester.

Additional Information

This class will not prepare students for a Math Analysis class. Satisfactory completion of Algebra II is required to be considered for Math Analysis.

Standards

The Mathematics: Grades 9-12 Standards can be accessed from the DoDEA website:

http://www.dodea.edu/instruction/curriculum/DoDEA_Content_Stand.htm