



Discrete Mathematics Syllabus

<u>Course Information:</u>	<u>My Schedule</u>
Course Title: Discrete Mathematics	Fall
Instructor: William Cooper	1st Period: Discrete Mathematics
Email: wkcooper@greenvilleschools.us	2nd Period: Precalculus Honors
Room: B215	3rd Period: Planning
Phone: (864) 355-6618 (voicemail)	4th Period: Precalculus Honors

Course Description:

Discrete Mathematics is a high-level mathematics course that explores the structures and systems foundational to data science, computing, and logic-based reasoning. This course includes advanced topics such as number theory, modular arithmetic, voting and apportionment methods, recursion, matrices, graph theory, set theory, logic, and mathematical induction.

Students will engage in deeper, more rigorous exploration of real-world applications through extended projects, complex problem solving, and use of technology such as spreadsheets and graphing tools. Students will be expected to independently explore mathematical reasoning, prove conjectures, and model advanced scenarios beyond the scope of the standard Discrete Mathematics curriculum.

Textbook: Thinking Mathematically Eighth Edition, Robert Blitzer

Required Materials:

- Pencil or Pen
- Notebook with paper
- Graphing Calculator (TI-84) (Provided)

Assessment and Grading Policy:

Categories and corresponding weights are:

60% Tests/Projects (Major Assessments)

30% Quizzes/Projects (Minor Assessments)

10% Classwork/Homework (Minor Assessments)

SC Grading Scale:

A 90-100

B 80-89

C 70-79

D 60-69

F 51-59

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Extra Credit, Makeup Work, Homework, Late Work, and other Classroom Policies as applicable:

- Homework: When assigned will factor into students Classwork/Daily Grades.
- Tests will be given at the end of each chapter. There will be approximately three/four tests per quarter.
- Extra Credit will not be given on an individual basis.
- Mauldin High's School Late Work Policy will be followed.

Extra Help

Students may come to B215 for extra help before school Tuesdays and Thursdays from 8:00-8:30am and after school Tuesdays - Fridays by appointment.

Behavior Expectations and Consequences:

- Be on time for class.
- Come to class prepared.
- Do not disrupt the learning environment
- Only water is permitted in class.
- No cell phones in class (See the Greenville County Schools Website for additional information)

Consequences:

If the rules are not followed the following steps will be taken:

- 1st offense- warning
- 2nd offense- parent phone call
- 3rd offense- detention
- 4th offense- referral to administrator

Learning Objectives:

- Analyze and compare voting systems and apportionment methods for fairness.
- Apply set theory concepts and operations to real-world classification problems.
- Use modular arithmetic and non-decimal bases to model real-world digital systems.
- Explore graph theory, including Euler and Hamiltonian paths and circuits.
- Construct and evaluate logical statements using truth tables, Venn diagrams, and symbolic notation.
- Perform operations with matrices and apply them to solve real-world problems.
- Utilize mathematical induction to develop and validate proofs.
- Solve permutation and combination problems involving counting techniques.



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Course Outline/Pacing Guide:

Unit	Topic	Timeframe (Approx.)	Overview
1	Set Theory	2 weeks	Power sets and Venn diagrams applied to real data sets
2	Voting & Apportionment	3 weeks	Analyze real election data and simulate alternative voting systems
3	Modular Arithmetic & Number Bases	2 weeks	Cryptography projects and coding systems
4	Logic & Reasoning	2 weeks	Construct and evaluate formal logical arguments and syllogisms
5	Graph Theory	2 weeks	Real-world network analysis (transportation, social networks)
6	Combinatorics	2 weeks	Use of probability trees and recursive formulas
7	Matrices	2 weeks	Real-world modeling with technology
8	Mathematical Induction	3 weeks	Constructing and evaluating advanced proofs