

VIRGINIA STATE UNIVERSITY
SCHOOL OF ENGINEERING, SCIENCE AND TECHNOLOGY
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
COURSE SYLLABUS : SPRING 2009
MATH 280: DISCRETE MATHEMATICS FOR COMPUTER SCIENCE I (3 Sem. Hrs)

Professor's Name: Dr. Dawit Haile

Office Hours: M: 1:00 – 3:00 pm. T: 1:00 – 3:00 pm. W: 1:00 – 3:00 pm. R: 1:00 – 3:00 pm. or by appointment

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Course Web Page: <http://sest.vsu.edu/~dhaile/Math280>.

2006-08 Catalog Description	The purpose of this course is to introduce fundamental techniques in Discrete Mathematics for application in Computer Science. Sets, Mathematical logic, Proof techniques, Relations, Functions, Mathematical induction, Counting principle, Analysis of Algorithms.
Prerequisite	MATH 121 with a grade of C or better
Textbook	Kenneth H. Rosen, <i>Discrete Mathematics and Its Applications</i> , 6 th Ed., McGraw-Hill, 2007.
Course Objectives	<p>The course has the following measurable learning outcomes.</p> <ul style="list-style-type: none">- students will be able to use and apply propositional logic and specify precise meaning of mathematical statements using predicate logic- students will be able to understand and apply the concepts of sets and functions- students will recognize and construct valid proofs using different techniques including the principle of mathematical induction.- students will be able to understand what an algorithm is and to determine an algorithm's complexity- students will be able to enumerate using permutation, combinations and other counting techniques- students will be able to use recursion to solve problems
Evaluation/assessment	<p>Homework and Quizzes: (100 points) Online homework is assigned once a week. A weekly quiz of 10-15 minutes length will be given every Thursday. Collaboration on assignments is not allowed.</p> <p>Test: Three in-class (100 points each) exams will be given throughout the semester. Tentative dates for these tests are 2/19, 3/12 and 4/23. These tests will cover lectures, assigned readings, homework assignment, etc.</p> <p>Writing project: A (50 points) paper on selected topics will be assigned.</p> <p>Final exam: The final will be a 200 point comprehensive exam.</p> <p>Each student's grade will be determined by the following criteria:</p> <p>Midterm Average = $\frac{2}{3}$ (Average of all work prior to the Midterm Exam) + $\frac{1}{3}$ (Midterm Exam Score)</p> <p>Final Grade = $\frac{1}{3}$ (Midterm Average) + $\frac{1}{3}$ (Average of all work assigned after the Midterm Exam and prior to the Final Exam) + $\frac{1}{3}$ (Final Exam Score)</p> <p>A: 90 - 100; B: 80 - 89; C: 70 – 79; D: 60 – 69; F: Below 60</p>

Relationship of course to program outcomes	<p>The following measurement standard is used to evaluate the relationship between the course objectives and selected program outcomes:</p> <p style="text-align: center;">X – Exposure F – Familiarity D – In depth</p> <p>Communicate effectively in writing – X Work independently – F Understand concepts and analytical approaches used in science & mathematics - D</p>
Prerequisites by topic	Understanding of basic mathematical concepts (numbers, algebraic expressions, simplifying expression)
Topics	<ol style="list-style-type: none"> 1. Logic, Sets, and Functions: propositional logic, truth tables, quantifiers, rules of inference, sets, functions, sequences, and summations 2. Algorithms, Integers and Matrices: algorithms, complexity of algorithms, integers, number theory, hashing, public key encryption 3. Mathematical Reasoning and Recursion: proofs, mathematical induction, recursive algorithms 4. Counting: pigeonhole principle, permutations, combinations and the binomial theorem
Attendance policy	Attendance is taken in every class meeting by signing attendance sheet. It should be understood that lack of attendance will affect your grade in a negative manner. If, for some unavoidable reason you must miss a test or quiz, see me about the possibilities of makeup. Unexcused absences will NOT be allowed to makeup tests or quizzes. No late homework or project will be accepted. If you are unable to submit your homework or project by the deadline, you must notify me <i>before</i> the deadline.
Disability statement	If you have disability that may require assistance or accommodation, or you have questions related to any accommodations for testing, note takers, readers, etc., please contact the Office of Disable Students services at 524 – 5061.
References	<p>Anderson, A James; DISCRETE MATHEMATICS WITH COMBINATORICS, Prentice Hall, Upper Saddle River, New Jersey.</p> <p>Balakrishnan, V. K.; INTRODUCTORY DISCRETE MATHEMATICS, Prentice Hall, Upper Saddle River, New Jersey.</p> <p>Dymacek, M Wayne and Sharp, Henry; INTRODUCTION TO DICRETE MATHEMATICS, McGraw Hill, Boston, Massachusetts.</p> <p>Epp, S Susanna; DISCRETE MATHEMATICS WITH APPLICATIONS, 3rd edition, Brooks/Cole Publishing Company, ITP An International Thomson Publishing Company.</p> <p>Grimaldi, P Ralph; DISCRETE AND COMBINATORIAL MATHEMATICS, 5rd edition, Wesley Publishing Company, Reading, Massachusetts.</p> <p>West, Douglas; Introduction to Graph Theory; 2nd edition; Prentice Hall, Upper Saddle River, Jersey.</p> <p>Dossey, John; Otto, Albert; Spence, Lawrence; and Eynden, Charles; Discrete Mathematics; Addison Wesley; Boston; 2006</p> <p>Haggard, Gary; Schlipf, John; and Whitesides, Sue; Discrete Mathematics for Computer Science; Thomson Brooks/Cole; 2006</p> <p>Agnarsson, Geir & Greenlaw, Raymond; Graph Theory: Modeling, Applications, and Algorithms; Pearson, Prentice Hall, Upper Saddle River, New Jersey.</p>