VIRGINIA STATE UNIVERSITY
SCHOOL OF ENGINEERING, SCIENCE AND TECHNOLOGY
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
COURSE SYLLABUS : SPRING 2009
CSCI 281: DISCRETE STRUCTURES (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/CSCI281.

2006-08 Catalog Description

Recurrence Relations, Introduction to Graph Theory, Trees, Boolean Algebras & Combinatorial Circuits, Modeling Computation, Grammars and finite automata

Prerequisite

MATH 280 with a grade of C or better.

Textbook

Kenneth H. Rosen, *Discrete Mathematics and Its Applications*, 6th Ed., McGraw-Hill, 2007.

Course Objectives

The course has the following measurable learning outcomes.

- Students will be able to construct recurrence relations and find solutions of recurrence relations of first and second order.
- Students will be able to state definitions and properties of graphs and digraphs.
- Students will be able to understand Boolean algebras and combinatorial circuits.
- Students will be able to understand the concepts Finite Automata, regular grammar, pushdown automata and context-free grammars.
- Students will be able to use JFLAP software to graphically design, animate and experiment with different types of automata and grammars by constructing examples.

Evaluation/assessment

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.
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.
Writing project: A (50 points) paper on selected topics will be assigned.
JFLAP Project: (50 points)
Final exam: The final will be a 200 point comprehensive exam.

Each student's grade will be determined by the following criteria:

Midterm Average = 2/3 (Average of all work prior to the Midterm Exam) + 1/3 (Midterm Exam Score)

Final Grade = 1/3 (Midterm Average) + 1/3 (Average of all work assigned after the Midterm Exam and prior to the Final Exam) + 1/3 (Final Exam Score)

A: 90 - 100; B: 80 - 89; C: 70 – 79; D: 60 – 69; F: Below 60

Relationship of course to program outcomes

The following measurement standard is used to evaluate the relationship between the course objectives and selected program outcomes:

X – Exposure F – Familiarity D – In depth

Communicate effectively in writing – X
Work independently – F
Understand concepts and analytical approaches used in science & mathematics - F

Prerequisites by topic

Understanding of mathematical concepts such as sets, logic, functions, basic proof techniques, recursion and counting.

Topics

Recurrence Relations, Solving Recurrence, Finite Automata, regular grammar, pushdown automata and context-free grammars, Relations, Introduction to Graphs, Representing Graphs and Graph Isomorphism, Shortest-Path Problems, Graph Coloring, Trees, Minimum Spanning Trees

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 *before* 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

Anderson, A James; DISCRETE MATHEMATICS WITH COMBINATORICS, Prentice Hall, Upper Saddle River, New Jersey.

Balakrishnan, V. K.; INTRODUCTORY DISCRETE MATHEMATICS, Prentice Hall, Upper Saddle River, New Jersey.

Dymacek, M Wayne and Sharp, Henry; INTRODUCTION TO DICRETE MATHEMATICS, McGraw Hill, Boston, Massachusetts.

Epp, S Susanna; DISCRETE MATHEMATICS WITH APPLICATIONS, 3rd edition, Brooks/Cole Publishing Company, ITP An International Thomson Publishing Company.

Grimaldi, P Ralph; DISCRETE AND COMBINATORIAL MATHEMATICS, 5rd edition, Wesley Publishing Company, Reading, Massachusetts.

West, Douglas; Introduction to Graph Theory; 2nd edition; Prentice Hall, Upper Saddle River, Jersey.

Dossey, John; Otto, Albert; Spence, Lawrence; and Eynden, Charles; Discrete Mathematics; Addison Wesley; Boston; 2006

Haggard, Gary; Schlipf, John; and Whitesides, Sue; Discrete Mathematics for Computer Science; Thomson Brooks/Cole; 2006

Agnarsson, Geir & Greenlaw, Raymond; Graph Theory: Modeling, Applications, and Algorithms; Pearson, Prentice Hall, Upper Saddle River, New Jersey.