

**VIRGINIA STATE UNIVERSITY**  
**SCHOOL OF ENGINEERING, SCIENCE AND TECHNOLOGY**  
**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**  
**COURSE SYLLABUS**  
**MATH 490: GRAPH THEORY (3 Sem. Hrs)**

**Professor's Name:** Dr. Dawit Haile

**Office Hours:**

**Office Building and Room Number:** HM 213S

**Office Phone Number:** 524 5920

**E-Mail:** [dhaile@vsu.edu](mailto:dhaile@vsu.edu)

**Course Web Page:**

<b>2006-08 Catalog Description</b>	Introduction to graphs and digraphs, introduction to algorithms, tree, networks, Eulerian and Hamiltonian graphs, planar graphs, coloring of graphs
<b>Prerequisite</b>	MATH 201 & CSCI 281 with grades of C or better
<b>Textbook</b>	Geir Agnarsson & Raymond Greenlaw; Graph Theory: Modeling, Applications, and Algorithms; Prentice Hall; Upper Saddle River; NJ.
<b>Course Objectives</b>	<p>The course has the following measurable learning outcomes.</p> <ul style="list-style-type: none"><li>- To provide students with an understanding of the basic concepts of graph theory.</li><li>- To provide the student with a basis of the mathematical properties of graphs and digraphs.</li><li>- To provide students with the understanding of various types of graphs including Eulerian graphs, Hamiltonian graphs, trees, and planar graphs.</li><li>- To provide student with an understanding of some of the applications of graphs.</li><li>- To provide student with an introduction to graph coloring and graph algorithms</li></ul>
<b>Evaluation/assessment</b>	<p><b>Homework and Quizzes:</b> (100 points) Online homework is assigned once a week. A weekly quiz of 10-15 minutes length will be given every Tuesday. Collaboration on assignments is not allowed.</p> <p><b>Test:</b> Three in-class (100 points each) exams will be given throughout the semester. Tentative dates for these tests are 2/13, 3/6 and 4/17. These tests will cover lectures, assigned readings, homework assignment, etc.</p> <p><b>Writing project:</b> A (50 points) paper on selected topics will be assigned.</p> <p><b>Final exam:</b> The final will be a 200 point comprehensive exam.</p> <p>Each student's grade will be determined by the following criteria:</p> <p><b>Midterm Average</b> = <math>\frac{2}{3}</math> (Average of all work prior to the Midterm Exam) + <math>\frac{1}{3}</math> (Midterm Exam Score)</p> <p><b>Final Grade</b> = <math>\frac{1}{3}</math> (Midterm Average) + <math>\frac{1}{3}</math> (Average of all work assigned after the Midterm Exam and prior to the Final Exam) + <math>\frac{1}{3}</math> (Final Exam Score)</p> <p><b>A: 90 - 100; B: 80 - 89; C: 70 - 79; D: 60 - 69; F: Below 60</b></p>

<b>Relationship of course to program outcomes</b>	<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 &amp; mathematics - F</p>
<b>Prerequisites by topic</b>	<p>Understanding of mathematical concepts such as sets, logic, functions, proof techniques, solving recurrence relation and counting principles.</p>
<b>Topics</b>	<p>Introduction to graph theory; Trees; Spanning trees; Properties of graphs and digraphs; connectivity and flow; planar graphs; graph coloring; graph algorithms</p>
<b>Attendance policy</b>	<p>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.</p>
<b>Disability statement</b>	<p>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.</p>
<b>References</b>	<p>Grimaldi, P Ralph; DISCRETE AND COMBINATORIAL MATHEMATICS, 5<sup>th</sup> edition, Wesley Publishing Company, Reading, Massachusetts.</p> <p>West, Douglas; Introduction to Graph Theory; 2<sup>nd</sup> edition; Prentice Hall, Upper Saddle River, Jersey.</p> <p>Merris, Russell; Graph Theory; A Wiley-Interscience Publication; John Wiley &amp; Sons, Inc.; 2001</p> <p>Harary, Frank; Graph Theory; Addison Wesley Publishing Company; 1969</p> <p>Bondy &amp; Murty; Graph Theory with Applications; Elsevier Science Publishing Co, Inc.; North Holland; 1979</p> <p>Gross, Jonathan &amp; Yellen, Jay; Graph Theory and its applications; CRC Press; 2000</p> <p>Chartrand, Gary &amp; Oellermann, Ortrud; Applied and Algorithmic Graph Theory; McGraw Hill, Inc; 1993</p> <p>Wallis, Walter; A Beginner's Guide to Graph Theory; Birkhauser; 2000</p>