

Salisbury University Department of Mathematical Sciences

MATH 490 : Special Topics: Introduction to Graph Theory
Syllabus (Tentative)

Description: Enables study in specialized areas such as complex variables, logic, non-Euclidean geometry or other topics suggested by faculty or students. 4 Hours Credit: Meets four hours per week.

Prerequisites: Varies by topic but usually C or better in MATH 306, MATH 310. May be taken twice under different titles. This course requires a C or better in MATH 210.

Intended Audience: Advanced mathematics students seeking to explore the field of graph theory.

Objective: To introduce the theory of graphs, including degree, connectivity, traversability, matchings, planarity, and Ramsey numbers.

Textbooks: *A First Course in Graph Theory*, by Gary Chartrand and Ping Zhang, ISBN: 9780486483689

Topic	Weeks
Chapter 1: Introduction	2
Graphs and graph models, connected graphs, common classes of graphs, multigraphs and digraphs	
Chapter 2: Degrees	1.5
The degree of a vertex, regular graphs, degree sequences	
Chapter 4: Trees	1.5
Bridges, trees, minimum spanning trees	
Chapter 5: Connectivity	3
Cut-Vertices, blocks, connectivity, Menger's Theorem	
Chapter 6: Traversability	1.5
Eulerian and Hamiltonian graphs	
Chapter 7: Digraphs	1
Strong digraphs, tournaments	
Chapter 8: Matchings and Factorization	2
Matchings, factorization	
Chapter 9: Planarity	1.5
Planar graphs, embedding graphs on surfaces	
Total	14

Evaluation

Homework	40%
Examinations	40%
Class Participation	20%

- Clear descriptions of thought processes, evidence of critical thinking, and effective communication must be demonstrated in written work.
- **Writing Across the Curriculum:** Students will be expected to communicate mathematics and mathematical ideas effectively in speech and writing. At the University Writing Center, trained consultants are ready to help you at any stage of the writing process. In addition to the important writing instruction that occurs in the classroom and during professors' office hours, the Center offers another site for learning about writing. **All students are encouraged to make use of these important services.**
- **NOTE:** Once a student has received credit, including transfer credit, for a course, credit may not be received for any course with material that is equivalent to it or is a prerequisite for it.