

Syllabus for Math 613-600: Graph Theory

Fall 2011, MWF 11:30–12:20, BLOC 160

Instructor: Catherine Yan

Office hours: Milner 220. Wednesday 10–11am and by appointment

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Course Home Page:

<http://www.math.tamu.edu/~cyan/Teaching/math613.html>

Course description: This is a course at the beginning graduate level to help the students gain basic knowledge of the structure of graphs and the techniques used to analyze problems in graph theory and discrete structures.

The course will cover fundamental concepts such as graphs, cycle, path, circuit, trees, matchings and factors, connectivities and coloring, network. We will also introduce topics in currently active research areas, including Ramsey theory, extremal combinatorics, algebraic graph theory, combinatorial optimization, and probabilistic methods.

Text: *Introduction to Graph Theory*, by Douglas West, second edition. Prentice Hall, 2001.

A main reference is:

A Course in Combinatorics, by J.H. van Lint and R.M. Wilson, 2nd edition, Cambridge University Press.

Grading: Homework assignments will be given biweekly. As exercise is an important part of combinatorics, anyone who doesn't hand in homework will get the grade F automatically. No late homework will be accepted except for university-approved excuses.

The grade will be determined by homework (70%) and a final project (30%).

The Project is due on December 2, 2011. The description of the project will be handed out by October 15, 2011.

Topics to be covered: each topic will take 1-2 week.

Basic concepts in graph theory, trees and algorithms, matchings and factors, flows in network, coloring of graphs and Ramsey theorem, Turan's theorem and extremal combinatorics, Dilworth's theorem and extremal set theory, linear algebra in graph theory, matrix tree theorem and De Bruijn sequences, Graph connectivity, planarity and coloring. If there is enough time, we will touch some basic topics in matroid theory or theory of random graphs.

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Americans with Disabilities Act (ADA) Policy Statement:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

SCHOLASTIC DISHONESTY WILL NOT BE TOLERATED.

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

CHEATING IS FORBIDDEN: Students who cheat will be reported to the Dean with a recommendation that their course grade be set at F. The dean may take further action, including expulsion from the university.