Mathematics 725, Spring 2010 (Section #86763)
Graph Theory (3 credits)

Essential Information

Instructor: Jeremy Martin (you can call me "Jeremy")
E-mail: `jmartin@math.ku.edu` (the best way to contact me)
Office: 623 Snow Hall, (785) 864-7114
Office hours: Tuesday and Wednesday 11–12, or by appointment

Meeting time: Tue/Thu 2:30 – 3:45 PM, 564 Snow Hall.

Course description: Math 725 is an introduction to graph theory and related topics in combinatorics. The course material will include directed and undirected graphs, trees, matchings, connectivity and network flow, colorings, and planarity. Depending on time and students' interests, additional topics might include the Tutte polynomial, matroids, Ramsey theory, random graphs, eigenvalues of graphs, and rigidity theory.

Website: The class website is:

http://www.math.ku.edu/∼jmartin/math725/

Bookmark the website and check it frequently! You are responsible for all information posted on the website, including announcements, homework assignments, and exam information.

E-mail: I will periodically send class information (announcements, homework hints, etc.) to all students' KU e-mail accounts. You are responsible for checking your e-mail regularly so as to receive this information.

Textbook: Douglas B. West, *Introduction to Graph Theory*, 2nd edition (Prentice-Hall, 2001). Available at KU Bookstore (`www.kubookstore.com`; (785) 864-4640). I plan to cover most of Chapters 1–6, plus additional topics for which I'll post lecture notes on the website.

Prerequisites: Math 290 (Elementary Linear Algebra) and at least one mathematics course numbered 450 or above. Essentially, you don't need to know anything about graph theory beforehand, but you should be comfortable with basic linear algebra and with reading and writing proofs. Experience with combinatorics (e.g., Math 724) and/or computer programming is helpful, but not required.

Course Requirements

Homework: Homework will be due approximately every two weeks, starting January 21. I'll post problems on the website at least a week before the due date. I encourage collaboration on the problem sets, but you must write up your own solutions independently and acknowledge all collaborators. The homework will be worth a total of 50% of your grade.

Project: Each student will complete an independent project, which may include one or more of the following: reading a research article, writing and testing a computer program, making and testing a conjecture experimentally, writing an expository paper, giving a brief talk to the class, etc. I will work with students individually to help you choose suitable topics for the projects. The project will be worth 25% of your grade.

Exam: The final exam is scheduled for **Tuesday, May 11, 1:30–4:00 PM.** The exam is worth 25% of your grade.

Administrative Information

Multiple exams: KU policy states that no student is required to take more than two final exams on a single day. Check the official final exam schedule and notify Prof. Martin as soon as possible if you have more than one other exam scheduled for DATE??

Makeup work: Your enrollment in this course is a commitment to hand in all work by its announced due date. If, for some legitimate and unavoidable reason, you are unable to turn in a homework assignment on its due date or to attend a scheduled test, midterm or final exam, you must notify Prof. Martin *in advance* to make appropriate arrangements.

Approximate time commitment: This is 3-credit course, so I would guess that most students will need to spend about 6 (or more) hours per week outside of class to earn a decent grade. In addition to spending time on homework problems, you should get into the habit of reading a section or two ahead in the book, so as to be better prepared for lecture.

Incompletes: A grade of I is a rare occurrence and is reserved for cases in which a student has completed most of the course work at an acceptable level, but is prevented from completing the course due to *extraordinary* circumstances. If you think an I may be warranted, you must consult Prof. Martin *before* the final exam. Note that a grade of I cannot be made up by taking the course again.

Dropping the course: Through February 4, you may drop a course and have it removed from your record. From February 5 through April 15, you may withdraw from a course (a grade of W will appear on your transcript). After April 15, dropping is not permitted. For complete details, consult the KU Registrar's office (151 Strong Hall; 785-864-4423; `http://www.registrar.ku.edu`).

Academic honesty and collaboration: You are required to abide by all KU policies on academic integrity: see `http://documents.ku.edu/policies/governance/USRR.htm#art2sect6`. Cheating, plagiarism or other academic misconduct will result in a failing grade on the assignment in question, and usually further disciplinary sanctions, possibly including a failing grade in the course.

You are encouraged to collaborate with other students on the homework assignments. However, intellectual honesty requires that each student write up his or her own solutions and acknowledge all collaborators. It is a violation of academic integrity to copy another student's homework, or to let someone else copy yours.

Students with disabilities: The KU Office of Disability Resources (22 Strong Hall; 785-864-2620 (V/TTY); `http://www.disability.ku.edu`) coordinates accommodations and services for all students who are eligible. If you have a disability for which you wish to request accommodations, please contact Disability Resources as soon as possible. Please also contact Prof. Martin privately in regard to your needs in this course.

Religious holidays: If you plan to observe a religious holiday which conflicts in any way with the course schedule or requirements, contact Prof. Martin at the beginning of the semester to discuss alternative accommodations.

Intellectual property: Course materials prepared by the instructor, together with the content of all lectures and review sessions, are the intellectual property of the instructor and are solely for use by students enrolled in the course. Redistributing course materials in any form without the consent of the instructor is prohibited. Likewise, video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. Upon reasonable request, the instructor will usually grant permission to record lectures, on the condition that such recording is used only as a study aid by the student making the recording, and is not modified or distributed in any way.