Math 573: Graph Theory, Fall 2016

Instructor: Kevin Milans (`milans@math.wvu.edu`)
Class Meetings: TuTh 10:00am-11:15am in Armstrong Hall 117
Office Hours: TuTh 11:15am-12:15pm, W 1:00pm-2:00pm, and by appointment, in Armstrong Hall 408H
Webpage: `http://www.math.wvu.edu/~milans/teaching/fa16/math573/`

Welcome: Welcome to Math 573: Graph Theory. I have the highest hopes and expectations for our class this semester. To truly learn advanced mathematics, you must actively engage the material in an aggressive way. Before you proceed to a proof, think about the theorem. Play around with some examples. What principles are at work? Why is the theorem true? How might the proof be structured? Thinking about these questions will build a bridge between the new material and your existing knowledge. Those connections will make it much easier to understand and remember the proof, appreciate its beauty, and to recognize when similar principles and techniques apply to new problems. After reading the proof, you might try some modifications. Can any of the hypotheses be weakened? Can any of the conclusions be strengthened? Is there any way to modify the proof to make it more natural or easier to understand?

Learning Outcomes and Course Goals: Students will be introduced to a wide variety of topics in graph theory, including trees, matchings, connectivity, graph coloring, and planarity. As time permits, additional topics of interest include random graphs, algebraic graph theory, and Ramsey theory.

Prerequisite: Math 343 and Math 283.

Textbook: *Introduction to Graph Theory*, Second Edition, by Douglas B. West

Homework: Homework is crucial to gain a full understanding of course material. Homework is assigned approximately once every two weeks and a *physical hardcopy* of your homework must be submitted. Homeworks must be prepared with an *electronic typesetting system*, preferably LaTeX.

In working on the homework problems, you may make use of the course textbook and discussions with fellow students and the instructor. Your written work must be entirely your own, which implies that *you must fully understand everything written down on your paper under your own name*. You may not obtain answers to homework exercises by using search engines, other textbooks, scholarly research articles, or other resources, because doing so would defeat the purpose of the homework.

Homework Time Impact: Please plan to spend an average of about 20 to 25 hours per homework assignment (10 to 12.5 hours per week). Part of learning involves trying approaches that do not work. This takes time and can be frustrating, but take heart! Everyone who studies and conducts research in mathematics goes through the same struggle, so you are not alone. Just make sure you allot enough time.

Homework Grading Policy: Homework may be submitted up to 1 week late for a score of 85% of what its on-time score would have been. Homework that is more than 1 week late is not accepted. When computing your homework average, your lowest scoring homework is dropped.

Evening Homework Sessions: Evening homework sessions will be held once a week. The evening sessions are dedicated to working on the current homework assignment in small groups (at most 3 students per group). Students are encouraged to make serious attempts to solve some problems before the weekly sessions. Students will discuss the problems, brainstorm ideas, and find solutions together. The instructor will be available for assistance and to offer hints. Attendance is optional but recommended. The instructor reserves the right to cancel the evening homework sessions if they are consistently not sufficiently well-attended.

Exams: We will have a midterm exam in class on Thursday, October 6. No make-up midterm exam will be offered. ~~The final exam is Tuesday, December 13, from 3pm-5pm~~. **The official final exam schedule has been changed. Our final exam is now scheduled for Tuesday, December 13, from 5pm-7pm.** All students must take the final exam during the scheduled exam period, unless specifically exempted by university rules. Both exams are open-book and open-notes. If it will help your grade, I will replace your midterm grade with your score on the final exam.

Grading Rubric: Course averages are converted to letter grades according to the scale on the right. The instructor reserves the right to lower these thresholds.

Homework	70%
Midterm Exam	15%
Final Exam	15%
Total	100%

A:	90–100	B:	80-89.9
C:	70-79.9	D:	60-69.9
F:	0-59.5		

Other Policy Notes: These policies covers all absences and contingencies, including those due to university Days of Special Concern. In truly exceptional cases, students may be excused from additional homeworks. Students with truly exceptional circumstances should contact the instructor as soon as possible, and appropriate arrangements will be made on a case by case basis.

Academic Integrity: You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will, at a minimum, result in an academic penalty of a score of zero on the assignment or test in question. Additional disciplinary measures are possible. For more information, see the university's Student Conduct Code.