The course: Our goal will be to study in some depth some topics in graph theory. The choice of topics will depend on your interests and my tastes. We will meet Mondays and Wednesdays, 5:30–7:17 p.m., with a short break half-way through. CRN is 13062, and the classroom is 272 SFH.

Instructor: Professor Jerrold W. Grossman, 346 SEB, (248) 370-3443. My preferred e-mail address is grossman@oakland.edu. I have posted a brief course Web page containing various items of interest; the address is https://files.oakland.edu/users/grossman/web/APM569/index.html, and it can also be reached through moodle. Rather than listing set office hours, my policy is that I’m almost always around and you are encouraged to come for help or just to chat whenever you wish.

Prerequisites: The prerequisite for this course is to have a reasonably high level of mathematical sophistication and know a little bit of graph theory, such as would be acquired in APM 563.

Textbook: The primary textbook for the course is Graph Theory, by J. A. Bondy and U. S. R. Murty (Springer Graduate Texts in Mathematics Volume 244, 2008). You can download the entire book chapter by chapter (pdf files) from the Web link available on the course Web page from an on-campus computer. The book “starts from scratch” and assumes no prior knowledge of graph theory, but I am assuming that you do know a bit, so we may proceed rather quickly through elementary topics. Look through the table of contents and let me know what interests you the most, as well as what you have already studied to the point that repeating it here would be a waste. At the end of the semester each of you will present a topic in the current graph theory research literature, which may or may not relate to the other things we cover during the term. See below for details.

Homework: Each section of the textbook has lots of exercises, and I will assign some of them for you to solve and hand in, probably weekly. Make sure to write up your solutions well. You may work together on these, but write up your own solutions. It would be a violation of academic conduct to find solutions on the Web or elsewhere and present them as your solutions, but it is acceptable to have a look at the book’s blog (see link on the course Web page). Come to me for help and hints as needed.

Report: Every student will choose a paper published in a mathematics (or computer science) research journal (or conference proceedings) within the past 15 years and prepare a written and oral report on it. What this means is that you need to understand the paper and convey that understanding to the rest of us. The written report should be about 5–10 pages and include the main idea of the paper, with at least outlines, in your own words, of the proofs of (some of) the major results, as well as discussion of the background and setting for this work (this involves looking at the references the authors cite). Each oral report should last about one hour. Your goal is to explain to us what the paper achieves, why it is important, and where it might lead. Give some background to set the stage (explain the previous work in this area), concentrate on examples, go through some of the proofs—whatever you want to do in your hour to make the experience the most rewarding for your classmates and instructor. Discuss your choice of paper with me ahead of time, and have made a firm decision before winter break. Also talk to me about your plans for the oral report (and the written report as well, if you want). The oral reports will occur during the last couple of weeks of class (exact schedule is dependent on the number of students in the course), and the written report is due on Monday, April 15. You can go for something more applied if you wish, but it should be a paper that was indexed in Mathematical Reviews (www.ams.org/mathscinet).

Grades: The written homework will count 65% of your course grade, the written report 20%, and the oral report 15%. Note that this means there are no formal exams. Think of each homework assignment as a kind of take-home test.