M 485 -- Graph Theory, Fall 2020

Contact information
- Instructor: Cory Palmer
- Office: Meeting on zoom only
- E-mail: cory.palmer@umontana.edu
- Office hours: TBA

Course description
Theory and applications of graphs. Topics chosen from trees, matchings, connectivity, coloring, planarity, Ramsey theory, random graphs, combinatorial designs and matroid theory.

Learning outcomes
1. Explain the basic concepts, terminology, and notation of graph theory;
2. Explore in depth several graph-theoretic themes;
3. Explain the basic applications of graph theory;
4. Construct and present mathematical proofs at the level of sophistication of a 400-level math course.

Class schedule
MWF: 10:00-10:50 PM. Lectures will be broadcast synchronously via zoom (link in email) and will be recorded and posted to Moodle. Some of you may have quick turnaround between in-person and remote courses. The university has set up remote learning spaces on campus. More information should be posted here: https://www.umt.edu/umonline/keep_on_learning/default.php.

Here are some tips for taking an online course and making it a successful experience: https://www.northeastern.edu/graduate/blog/tips-for-taking-online-classes/

Textbook
There is no assigned textbook for this class. I will provide the class with lecture notes. I do strongly recommend the following textbooks as a supplemental reference: 1) *A First Course in Graph Theory* by Chartrand and Zhang and 2) *Graph Theory* by Diestel.

Homework
Homework will be assigned (roughly) every week. You may work in groups on the homework, but be sure to write up your own answers. Late homework will only be given partial credit and may not be given feedback. As a courtesy for unforeseen circumstances one homework grade will be dropped. Homework missed due to illness, etc (with proper documentation) will also be dropped. Homework will be graded both on correctness and clearness of arguments. Work that is too difficult to follow may be marked off. Homework will be submitted online through: https://gradescope.com (entry code in email).

Exams

There will be three take-home exams one of which will serve as the final exam. These exams are open book, open notes, open internet, but with no outside help from other individuals (online or otherwise).

LaTeX

Written work must be typeset in LaTeX. For those students who have not used LaTeX, I will organize a short tutorial and give a template file. Fortunately, the subject of graph theory is not notation intensive and is therefore a great place to start learning LaTeX. I strongly recommend the free web-based LaTeX editor: https://www.overleaf.com/

Graduate increment

Graduate students in this course are expected to show a deeper understanding of the material. Homework and exams will include alternative (or additional) problems intended to test this.

Grading

Your grade will be composed of 30% homework and 70% from three take-home exams. Letter grades and +/-s will be assigned according to the standard scale.

Class website

Homework assignments will be posted to gradescope and recorded lectures will be posted to Moodle.

Accommodations

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommason Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Academic honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code (http://www.umt.edu/safety/policies/).

Registration deadlines

Full registration deadlines can be found online on the registrar calendar (http://www.umt.edu/registrar/calendar.php).