

Instructor : Aaron Montgomery

Class : M–Th @ 2:00–2:50 in Samuelson 102

Office Hours : MTh @ 11, TW @ 1, and by appt.

Email : montgoaa@cwu.edu **Phone** : 963-1906

Optional Text : Velleman’s **How to Prove It**

Textbooks:

There is no required text for this course. You can also scour the internet for information about this topic. However, for most of the problems I will assign, if you are scouring the internet for help, you are doing them wrong. If you want a reference text for this material. The following texts are the ones I have on my shelves:

- **Combinatorics** by Brualdi
- **Combinatorics and Graph Theory** by Harris, Hirst, and Mosshinghoff
- **Discrete Mathematics and Its Applications** by Rosen
- **Concrete Mathematics** by Graham, Knuth, Patashnik
- **Mathematics for Computer Science** by Lehman and Leighton (2004) or Lehman, Leighton, and Meyer (2011)

Course Outcomes:

This course (and MATH 351) are designed to develop your proof writing skills so that you will be prepared for later courses (the Abstract Algebra and the Analysis sequences in particular). In order to pass this course, you will need to be able to independently set up proofs and to be able to fully develop proofs that fit into the “follow your nose” pattern.

This course will introduce the basic concepts of combinatorics and graph theory, focusing on the use of Mathematical Induction.

Office Hours: I have four hours set aside for office hours each week. During those times, I will be in my office and you can drop in to ask questions. You can also send me an email and we can set up an appointment to meet at other times. Typically, when you request an appointment, I will put together a list

of times I am available for the remainder of the week, you get to pick one and (if it is still free), I'll put you in my calendar. When you come to office hours, be prepared.

If you are asking questions about a proof, I will expect you to be able to tell me the definitions of all the terms in the theorem and to construct some examples that may or may not satisfy the conditions of the theorem. If you cannot do these things, I will send you off to do them before I will help you. Unlike using mathematics, doing mathematics (also known as proof writing) is not an activity that can be effectively mimicked. Do not expect to come to my office and watch me do a proof that is almost identical to the proof you are supposed to write. I will try to provide you with hints and examples that will help you understand the concepts involved and you will be expected to use this understanding to synthesize the proof. This means that asking lots of questions on Thursday is not a good way to have the homework done by Friday. Ask questions on Tuesday and Wednesday so that you have time to build an understanding by Thursday.

Graded Coursework

Homework: 140 Points — There will be 8 homework assignments (all assignments are posted on the website), each worth 20 points with the lowest score dropped for a total of 140 points. After getting your homework returned, you will have one week during which you can attempt to rework problems you missed for reduced credit. Late homework is not accepted. Homework turned in one week after the due date will be graded with the reworked problems and will be assigned reduced credit. Each homework assignment should be submitted to Canvas as a single PDF file.

Much of your homework involves writing proofs. I expect proofs to be complete and follow the guidelines in the MATH 351 packet. Minimal points will be given for homework that requires me to rotate the page, squint to make out the words, or fill in missing boilerplate. I'm not going to spend my time doing the easy parts of your assignment for you. If you expect a good grade, you are going to need to at least make the effort to do the easy parts yourself.

One way to help me avoid squinting is to use \LaTeX . This also makes it easy for you to correct your work when you resubmit them to me. To encourage

this, I will give you a **1 point bonus** for each assignment you turn in that is written in \LaTeX .

Exams: 110 Points — There will be two exams. A midterm (see Canvas for date) and a cumulative final exam (see CWU’s standard final schedule for date and time). Exams will be in-class and will require you to be able to write proofs. The midterm will be worth 50 points and the final exam worth 60 points.

Final Grades: 250 Points —

≥ 218	B+		≥ 233	A		≥ 225	A-
≥ 193	C+		≥ 208	B		≥ 200	B-
≥ 168	D+		≥ 183	C		≥ 175	C-
			≥ 158	D		≥ 150	D-

Masks

Due to COVID-19, students in this classroom are required to wear masks that cover both the nose and the mouth. If you attend class without an appropriate mask you will be asked to leave and obtain a mask before returning. If you refuse to wear a mask or leave, class will be dismissed and a Report of Behaviors of Concern will be submitted to the Dean of Students.

If you do not have a face mask, Central Washington University can provide one for you. If you have not yet received your CWU-supplied mask, please go to the SURC Information Desk. Some departments/programs may also provide disposable masks. Please obtain a suitable mask prior to the start of your first class. Information on appropriate masks can be found at this web site: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html>. Standard face shields, single-layer neck gaiters, single layer masks, masks with one-way vent valves, and handkerchiefs are not considered appropriate masks for this course.

Accommodations

Central Washington University is committed to creating a learning envi-

ronment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

In compliance with RCW 28B.137.010, Central Washington University makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.