Math 280W: Introduction to Proof
Individually Designed Course for Cassidy Bullock
Spring 2020 — Fridays 1:00pm-3:00pm

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Prerequisite: C- or better in Math 252.

Materials: Your textbook is Mathematical Reasoning: Writing and Proof, Version 2.1, by Ted Sundstrom. This book is available for free as a pdf at scholarworks.gvsu.edu/books/9/. You can also purchase a hardcopy on this website for a reasonable price, but the hardcopy is not required. You do not need a calculator for this class. You should have a pencil and notebook in class every day to take notes.

Course Goals: This course is an introduction to formal mathematical proofs. It is a writing-intensive course, and as such you will be doing a lot of writing. During this course:

1. Students will demonstrate the ability to make rigorous mathematical arguments in axiomatic and non-axiomatic systems. [Note: This outcome aligns to the Mathematics Program Learning Outcomes.]

2. Students will demonstrate effective written communication of mathematical concepts. [Note: This outcome aligns to the Written Communication Learning Outcome for General Education.]

3. Students will demonstrate skill in basic proof techniques including direct proof, proof by contradiction, proof by cases, and proof by mathematical induction.

4. Students will intuitively understand and have a working knowledge of the notions of injectivity and surjectivity of functions, and of the notions of reflexivity, symmetry, antisymmetry, and transitivity for relations.
Course Structure

Structure: Each week, you’ll complete a Guided Practice Assignment. Each assignment will consist of a list of learning objectives, print and video resources for you to read and view, and a list of questions for you to prepare. During the first part of our meetings, we will discuss the Guided Practice and clear up any confusions you have. Then I will give you a few problems to work on during our meeting time. Finally, I will assign more in-depth homework problems for you to complete for the next week.

Homework: Homework will be assigned most weeks as described above. There will be no homework due during exam weeks.

Exams: There will be two exams in this course: the midterm exam and the final exam. The final exam will be cumulative. Here are the dates:

- Midterm Exam: Week 5
- Final Exam: Week 11

Grading: Your percentage grade will be calculated as follows:

- Homework: 40%
- Attendance/Participation: 10%
- Midterm Exam: 20%
- Final Exam: 30%

Letter grades will be determined as follows:

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<tr>
<th>Grade</th>
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<tr>
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Course Policies and Resources

Absences: If you know you are going to miss class due to a previously scheduled activity, you must notify me before the absence in order to be excused (and therefore eligible for make-up work). Except in the case of WOU-sanctioned activities, I reserve the right to not allow make-up work. If you miss class due to an unforeseen emergency, please notify me as soon as possible, and submit a report by going to www.wou.edu/advising/absence. Exams and classwork may not be made up unless at least one of these two channels is followed in a reasonable timeframe.

Late Work: For individual homework assignments, 10% will be deducted from the score on the assignment for each weekday it is late, except in the cases of excused absences, up to a maximum of 50% deduction. I will not deduct homework more than 50%.

Incompletes: An Incomplete can only be granted for a student who is passing a class and has a documented emergency that prevents them from completing the course.

Student Success: If I am concerned about your academic progress and ability to succeed in the course, I may make a referral to Student Success and Advising through the Wolf Connection System (WCS). If a referral is created, an Academic Success Advisor from SSA will connect with you via email or telephone to discuss challenges you may be facing and your plan to overcome those obstacles and achieve success. This referral process is in place as a way to support you in this class and not a punishment. Anytime you want to discuss strategies for academic success, you may schedule an appointment with an Academic Success Advisor by calling 503-838-8428, emailing studentsuccess@wou.edu, or online by logging into the Portal, selecting WCS and selecting Get Advising.

Accommodations: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Services, APSC 405, or at 503-838-8250, as early as possible in the term. Students needing medical or mental health care can access the Student Health and Counseling Center by calling 503-838-8313, emailing at health@wou.edu, or by visiting the SHACC building.
Course Policies and Resources

Veterans/Military: Western Oregon University recognizes that those who are actively serving in the Reserves or National Guard of the United States are required by their military contract to attend mandatory training. If you will be absent due to military orders, I strongly encourage you to communicate that with me as soon as possible so we may discuss alternative arrangements.

Reporting: As an employee at Western Oregon University, I am required by federal law to report any incident of sexual misconduct. If you wish to talk with me about something that has occurred to you or another student, I must inform university personnel. Reporting this information helps the university to safeguard students and get students the help and support needed. You have the right to maintain your privacy. I will only report what you confide in me. If you would like additional information about sexual misconduct response at WOU, please visit the website at http://www.wou.edu/student/sexual-misconduct-resources/sexual-assault-care/

Mental Health: If you experience overwhelming academic stress, difficult life events, or feelings of anxiety or depression, I strongly encourage you to seek support. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you. Here are some resources available to you.

- Student Health and Counseling Center (wou.edu/health). Counseling services are free for all WOU students taking at least 6 on-campus credits.
- WOU’s Suicide Prevention and Mental Health Promotion program (wou.edu/mental-health).
- For life threatening situations, call 911 or Campus Public Safety (wou.edu/safety) at (503) 838-9000.
- I am a SafeZone (LGBTQ+) Ally, I am trained in the QPR Suicide Prevention Technique, and I serve on the Abby’s House (Center for Equity and Gender Justice) Board, so I can provide support and referrals in difficult situations.
Course Policies and Resources

Academic Honesty: I expect you to be honest in this course. I will be clear about when you can and cannot talk to one another about assignments, and when you may use resources (such as the internet) to get help. If you are ever confused, please ask me. For more specific information about WOU’s academic misconduct policy, see the WOU Student Code of Responsibility, available from the Office of Student Conduct.

Email: Please use your WOU Gmail to send me an email; otherwise, it may be sent to my spam folder. I will respond to all emails within 48 hours, and usually much quicker. Likewise, you must check your WOU Gmail at least once per weekday while you are enrolled in this course, and you must read my emails entirely. When you are composing a message to me, please consider readability and tone. If you are asking a question about a particular math problem, it is helpful if you attach a picture of your work on that problem so far.

Moodle: At moodle.wou.edu you may access all course documents such as this syllabus, handouts, homework assignments, and keys. I may also post short videos or other resources that supplement what we’ve done in class and on homework. In addition, you may view your scores on previous assignments and your current course grade. I will post announcements in Moodle as well, and I will always duplicate such announcements in class.

Getting Help: Come to office hours! You do not need an appointment to attend my scheduled office hours – just drop in when it is convenient for you. If none of my office hours times work for you, please talk to me after class or email me to set up a different time. There is also free drop-in tutoring in the Math Center on the second floor of Hamersly Library.

Suggestions: Success in mathematics does not rest on innate ability, but rather upon diligent and careful work over time. Most of your learning will take place on your own and everyone will move at their own pace in understanding the material. Do not be discouraged if you don’t get something the first, second, or even third time. Most of us didn’t either. Mathematics is a habit of thought, and it takes time to develop this habit. Focus on understanding and appreciating the material and everything else will fall into place.