

Syllabus for MATH 100

Introduction to Proof and Problem Solving

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| Term: | Summer 2019 | Instructor: | Suzana Milea |
| Time: | TuWTh 03:00PM-05:30PM | Office: | McHenry 4117 |
| Room: | Phys. Sciences 140 | Email: | smilea@ucsc.edu |

Office Hours: Tuesday 12:30PM-2:30PM in McHenry 2359.

Discussion Section: Friday 1 PM - 3 PM in Physical Sciences 140.

Teaching Assistant: Malachi Alexander.

TA's Email: majalexa@ucsc.edu

TA's Office Hours: Monday 1 PM - 3 PM in McHenry 4112.

Canvas: I will be using the Canvas learning management system to post/update the syllabus and other course resources. You can log in at <https://canvas.ucsc.edu> using your CruzID and Gold password.

Piazza: We will be using the free, online question-and-answer platform Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. I encourage you to ask questions when you're struggling to understand a concept (you can even do so anonymously).

Text: *Mathematical Proofs: A Transition to Advanced Mathematics* by G. Chartrand, A. D. Polimeni, and P. Zhang, 4th edition.

Course Description: Basic concepts and ideas necessary for upper-division mathematics and techniques of mathematical proof. Introduction to sets, relations, elementary mathematical logic, proof by contradiction, mathematical induction, and counting arguments.

Tentative Schedule: • Week 1: Sets (Ch. 1), Logic (Ch. 2)

- Week 2: Direct Proof and Proof by Contrapositive (Ch. 3 and 4)
- Week 3: Existence and Proof by Contradiction (Ch 5), Mathematical Induction (Ch 6)
- Week 4: Equivalence Relations (Ch.9), Functions (Ch. 10)
- Week 5: Cardinality of Sets (Ch 11).

If time permits, we will select some topics to cover from Ch. 12-19.

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| Classwork | 15% |
| Homework | 20% |
| Midterm | 30% |
| Final | 35% |

Exams: The midterm exam will be **Wednesday August 14th** and the final exam will be **Thursday August 29th**.

Classwork: During each lecture I will assign one problem (worth 3 points) with the purpose of better understanding the material discussed at that moment. You will be allowed to collaborate with your classmates (in a group of 3-4 people). To get full credit for your classwork you will need 15 points. If you cannot attend enough lectures to accumulate these points, you can choose instead to have the final exam worth 50% of your final grade.

Homework: You will be able to see the problems assigned and the due dates in Canvas. You can turn in your homework either in lecture, office hours or discussion section.

Collaboration on homework: is allowed, although if you are working with another student please state that you have done so. Who you work with may change from problem to problem, so please note your collaborators separately for each problem. However, you must work on each problem on your own before

discussing it with your collaborators. All homework assignments must be written up individually and only after making sure you have a very good understanding of what you write. Failure to declare collaboration with another student will result in a grade penalty (and it is remarkably simple to tell when students have copied each other). Also, if you have used a textbook or online notes to help you understand/solve a problem please cite a reference.

Written Assignment in LaTeX

- There will be one written assignment. It will be due the last week in class on Tuesday. I will post the sufficient information for starting the project on Canvas.
- The written assignment is required to be typed. Specifically typed in L^AT_EX. L^AT_EX is a typesetting program that is useful for typesetting mathematical formulae in a professional setting. It is a free program, and can be downloaded or used online (for example, at <https://www.overleaf.com>).
- I will post templates on canvas to help you get up and running with LaTeX. If you are having trouble getting code to compile, or framing an equation in a way you'd prefer, then you are more than welcome to ask me these questions in office hours or on Piazza.

Make-Up Policy: Makeups on an exam will be given at the discretion of the instructor. A legitimate and verifiable excuse is required.

Student Disabilities Policy: UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first week of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Important 2019 Deadlines: Drop: Monday, August 5. Request for W: Friday, August 16.

Neither Summer Session nor instructors drop students for non-attendance or non-payment. Students must drop themselves. Dropping results in full tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund). For all dates and deadlines, including change of grade option (P/NP) and grades due, here is the summer academic calendar: <https://summer.ucsc.edu/studentlife/index.html>. For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email summer@ucsc.edu .

Academic Dishonesty: Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC. In the event a student is found in violation of the UCSC Academic Integrity policy, he or she may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case. Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the Academic Integrity page at the Division of Undergraduate Education.

Title IX: The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors. The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. Information about the Title IX Office , the online reporting link , applicable campus resources , reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment and the UC Santa Cruz

Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu . The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the online reporting option , you can contact the Title IX Office by calling 831-459-2462.