Instructor. Dr. Ariel "Ari" Rosenfield (she/her)—Feel free to call me Ari, but Dr. Rosenfield is also fine. I'm not a professor yet :)

- **Email.** rosenfia@uci.edu
- **Office and office hours.** IPST 2100E, Monday 4-5P and Wednesday 11A-12P, or by appointment. *(IPST does not have an elevator. If you need ADA accessibility, I am happy to accommodate: please email me to schedule a meeting.)*
- **Course Canvas page.** ???
- **My website.** https://ari-rosenfield.github.io/

Class meetings. ATL 1114, Monday 1-1:50P, Wednesday 1-2:50P, Friday 1-1:50P

Textbook. Ellis and Gulick - *Calculus with Concepts in Calculus, 6th Ed.* (Note: This textbook is expensive!!! Unfortunately, I'm required to use it for this course. I will provide problem statements for any exercises I ask you to do from this book. For alternative reading, a free option that appears to cover most of the same material is Community Calculus by David Guichard and others. Wikipedia is also an excellent resource for learning math.)

Learning outcomes. At the end of the course, you will:

- Be able to use integration with respect to a single variable to find the volume and surface area of solids;
- Know what a parametric curve/surface is and be able to compute the length of such a curve using integration;
- Know how to determine whether a function has an inverse and how to apply the inverses of some common functions in the context of integration;
- Know how to use L'Hôpital's rule to evaluate limits;
- Be able to use integration by parts and method of partial fractions to evaluate an antiderivative;
- Be able to use trapezoidal and Simpson's methods for approximating definite integrals, and to identify cases where their use is appropriate;
- Be able to determine whether a sequence or infinite series converges, compute their limits when they do converge, and understand their relationship to integrals.

M	T	W	Th	F
9/2: X , SP1				
9/8: SP2		9/10:Q1		
9/15: SP3		9/17: Q2		
				9/26: Q3
9/29: SP4				10/3: E1
10/5: SP5				10/10: Q4
10/13: X, SP6	10/14: X			10/17: Q5
		10/22: Q6		
10/27: SP7				10/31: E2
11/3: SP8		11/5: Q7		
11/10: SP9		11/12: Q8		
		11/27: Q9		
		11/26: X	11/27: X	11/28: X
12/1: SP10				12/5: E3
		12/10: Q10		
	12/16: Final			

Course events ↑. Key: Q = Quiz, SP = Suggested problems posted, E = Exam, X = No class

Syllabus. (Roughly!)

- **Sep 1-7.** Review of 140 (roughly 5.2, 5.4-6). Solids of revolution (6.1).
- **Sep 8-14.** Arc length (6.2), surfaces of revolution (6.3).
- **Sep 15-21.** Parametric curves and applications to arc length and surface area (6.7, 6.8).
- **Sep 22-28.** Physics applications: Work, moments and center of gravity (6.4, 6.5).
- **Sep 29-Oct 5.** Useful analytic functions and their inverses (7.1-7.3).
- **Oct 6-12.** More inverses and useful analytic functions (7.4, 7.5). L'Hôpital's rule (7.6).
- **Oct 13-19.** Techniques of integration: Integration by parts, trig substitutions (8.1-8.3)
- **Oct 20-26.** More techniques of integration: Partial fractions, numerical approximations (8.4-8.6). Improper integrals (8.7).
- **Oct 27-Nov 2.** Sequences (9.2, 9.3).
- **Nov 3-9.** Infinite series and tests for convergence (9.4-9.6). Absolute convergence (9.7).
- **Nov 10-16.** Power series and Taylor series (9.1, 9.8, 9.9).
- **Nov 17-23.** Binomial series (9.10).
- **Nov 24-30.** Conic sections (10.3).

- **Dec 1-7.** Some combination of catch-up, review, or your choice of topic, depending on how we feel (readings TBD).
- **Dec 8-14.** Some combination of catch-up, review, or your choice of topic, depending on how we feel (readings TBD).
- **Dec 15-21.** Finals week!

Grading. "Homework" 0%, Quizzes 40%, Midterms 45%, Final 15%. The class will probably not be curved, but I may adjust scores upward at the end of the term if one of the quizzes or exams is more difficult than anticipated.

"Homework." I will post suggested problem sets each week. Due to newly prevalent usage of LLMs for doing college coursework, these should not be submitted and will not be graded, but I'm happy to discuss solutions to them during office hours. Quiz questions will be taken from the "fair game" section of the problem sets, with some small adjustments to constants and so forth. Problem sets will also include some challenge problems which will not appear on any quizzes or exams.

Quizzes. There will be a total of 10 quizzes this semester, given in the last 15 minutes of the lecture period on either Wednesday or Friday. That's sort of a lot, but there is a significant body of evidence showing that frequent low-stakes testing improves both long-term knowledge retention (see references at wiki: Testing effect) and performance on higher-stakes tests; for example, your final exam. To ensure that the stakes are sufficiently low, each quiz will consist of at most 3 questions, and the problems will be approximately at the level of the easiest textbook exercises, which are designed to test basic fluency. **Your lowest two quiz scores will be dropped when computing your final grade.**

Use of LLMs. Why bother? Aren't we all here to learn how to think better??

Exams. There will be 3 midterm exams and 1 final exam. The midterm exams will take the last 50 minutes of the lecture period on the following days: **Friday Oct 3, Friday Oct 31 (Halloween, sorry!), and Friday Dec 5.** The final exam for this course is on **Tuesday, December 16 from 4-6PM.**

Make-up quizzes and exams. Use of notes, electronic devices, or other aids is not allowed for any quiz or exam. Make-up assessments will be given in case of a documented excused absence, per university policy. Acceptable excuses per the UMD Policy on Excused Absences:

> *Events that justify an excused absence include religious observances; mandatory military obligation; physical or mental health conditions of the student or an immediate family member; participation in university activities at the request of university authorities; and compelling circumstances beyond the students control (e.g., death in the family, required court appearance). Absences stemming from work duties other than military obligation (e.g., unexpected changes in shift assignments) and traffic/transit problems do not typically qualify for excused absence.*

To receive accommodation for an excusable absence, you need to provide correct documentation as early as possible. See the link above for timing and documentation requirements.

Exam revision policy. Once you get your midterm exam back, you can choose one problem to revise and get points back for. The idea here is to lower the stakes of the exams without reducing your motivation to study, and also to take advantage of the hypercorrection effect. To get points back for a problem, email me to schedule a 15-minute window of time to meet. The scheduling email should be sent no more than one week after the exam is returned to you. During this meeting, you will take up to 15 minutes at the board to present the following:

- an explanation of why your original solution was incorrect;
- an explanation of how you arrived at the correct solution;
- a correct solution to the problem you missed.

You are free to use any resource to prepare this presentation, but only handwritten notes are allowed when you explain your solution to me. I will be extremely picky and make it difficult for you to get points back—please be honest with yourself and with me about what you understand and don't understand! It's easy to detect BS in mathematics; there's no shame in misunderstanding or ignorance, but BS will be penalized as harshly as possible. *(Unfortunately, since the final is in common, you won't be able to do this for the final exam.)*

Academic integrity. Following the UMD academic integrity policy is a requirement to pass this class. Please see this website for more information on that policy. The homework assignments can be worked on collaboratively, but the quizzes, the midterms, and the final exam must be taken individually.