Capstone: Senior Seminar I & II Syllabus
(MATH 499A & B)

Instructor: Jessica Sklar (she/her/hers)  
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Office: Morken 259

Course site: http://community.plu.edu/~sklarjk/499
Class meeting time & place: W 3:40–4:45 pm, Morken 132
Office hour scheduler: https://sklarjk.youcanbook.me/

Office hours: My in-person office hours are Tuesdays 12:00–2:00 pm and Wednesdays 2:30–3:30 pm. All meetings are by appointment; please schedule your appointment at https://sklarjk.youcanbook.me/ at least 2 hours in advance. (If you wish to meet for me for half an hour instead of for just 15 minutes, you may sign up for two adjacent 15-minute appointments.) If you have conflicts at these times, please talk to me in person or email me to set up an appointment at an alternate time. Please officially cancel your appointment at https://sklarjk.youcanbook.me/ at least 2 hours before its starting time if it turns out that you will be unable to attend it.

Textbook: There is no textbook for these courses.

Learning Outcomes

- Communication: Be able to read, interpret, write about, and talk about mathematics. (Practice & Demonstrate)
- Computation: Develop computational, algorithmic, and technological problem-solving fluency. (Demonstrate)
- Abstraction: Be able to work with abstract mathematical structures, and to generalize from the concrete to the abstract. (Practice & Demonstrate)
- Application: Be able to apply mathematical concepts to concrete situations. (Demonstrate)
- Disciplinary Citizenship: Develop collaborative skills, independence, perseverance, and experience with open-ended inquiry. (Practice & Demonstrate)

Objectives

The primary goals of the mathematics capstone are listed below. You will: gain understanding of what it means to conduct mathematics research; be able to find resources needed to conduct mathematics research; be able to read and understand mathematical papers written for a collegiate audience; be able to understand the essence of a complex mathematics paper without necessarily understanding all of the details; learn to use \LaTeX, a mathematical and scientific markup language; be able to give constructive feedback to peers; improve your mathematical writing skills; improve your mathematical presentation skills; present your work in writing and in presentations. learn to be an independent mathematics learner.

Class Attendance and Participation

Attendance is mandatory for this class. I hope that you will make it to class every day. I will formally take attendance. You especially need to make sure you attend the seminar talks; our speakers have spent a great deal of time preparing their talks and you should be there to support their work as part of the mathematical community. Additionally, when you are present, you should actively participate by asking thoughtful questions, demonstrating interest in your mathematical advancement, and learning from others (through careful listening). If you miss a seminar talk, I will require you to watch an external talk (online is ok) and write a short review.

Assignments

In this course we will learn how to use the mathematical typesetting program \LaTeX. I will provide templates that you can modify; there are many online resources for learning \LaTeX, and we will spend some time during class learning the basics. All written work for the semester will be typeset using \LaTeX, and all presentation slides will be created using \LaTeX’s Beamer package. We will discuss how to use this package in class, and I will provide you with a template for a Beamer presentation.
During 499A:

- You will read/watch and write reactions to some mathematics reading and presentations. Reactions will be given grades that are elements of the set \{✓, 0\}.

- You will complete several written assignments, all relatively short, which will provide you practice with \LaTeX and practice writing about mathematics. These assignments will be given grades that are elements of the set \{✓, ✓+, ✓−, 0\}.

- You will give several presentations. Each should have a length of around 5–10 minutes. The purpose of these presentations is to give you practice creating Beamer slides, to gain confidence speaking in front of others, to learn to speak with precision about mathematics, and to share interesting mathematics with your peers. These presentations will be given grades that are elements of the set \{✓, ✓+, ✓−, 0\}.

- You will provide your peers with feedback on their presentations, and possibly on their written work.

- You will be assigned a capstone topic and advisor (based on your preferences).

- You will attend talks given by seminar speakers.

During 499B:

- You will attend talks given by seminar speakers.

- You will have outlines and rough drafts of your paper and presentation slides, as well as a title and abstract for your capstone talk, due at certain times on certain dates. For each outline/draft, you will receive either a 1 (if you turn it in on time) or a 0 (if you don’t).

- You will complete your final capstone paper. While there is no set page length for capstone papers, it is quite difficult to present the appropriate level of work in fewer than 8 pages. Therefore, I expect most capstone papers to be between 8 and 20 pages, using a provided template for margins, text size, and line spacing. Depending on the number of diagrams, the inclusion of computer code or data, some papers may be longer, but that is rare. You can access previous capstone students’ final papers at https://tinyurl.com/yy9ndgsb. You will receive a letter grade for this paper.

- You will also present your work during May. Your final presentation should be about 20 minutes long; it will be followed by a 5-minute question period. You will receive a letter grade for this presentation.

Grade breakdowns

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\begin{array}{lcc}
\text{499A} & \text{499B} \\
\text{Written work} & 40\% & \text{Paper} & 40\% \\
\text{Presentations} & 40\% & \text{Presentation} & 40\% \\
\text{Feedback and reactions} & 10\% & \text{Outlines/drafts/title & abstract} & 10\% \\
\text{Attendance} & 10\% & \text{Attendance} & 10\%
\end{array}
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Success in this Class

This class is about your personal growth as a student. Most of you will graduate at the end of the year with a degree in mathematics. We expect you to learn to be a lifelong learner in this class. In order to be successful in this class, you have to be willing to take initiative on your own. I expect you to keep yourself on task and to be a self-motivated learner.

Accommodations

Students with medically recognized and documented disabilities and who are in need of special accommodation should contact the Office of Disability Support Services (x7206). If you need special accommodations, please schedule an appointment to meet with me, so we can discuss approved accommodations.
Academic Dishonesty

As stated in PLU’s Faculty Handbook, PLU’s expectation is that students will not cheat or plagiarize, and that they will not condone these behaviors or assist others who plagiarize. Academic misconduct not only jeopardizes the career of the individual student involved, but also undermines the scholastic achievements of all PLU students and attacks the mission of the institution. Academic honesty is especially relevant in the capstone course, as students are presented with a challenging task of writing individual research papers.

Cheating includes, but is not limited to: submitting material that is not yours as part of your course performance (e.g., copying from another student’s work; allowing another student to copy your work; and/or helping another student to cheat).

Plagiarism includes, but is not limited to, representing an idea or strategy that is significant in one’s own work as one’s own when it comes from someone else—e.g., directly copying information from another work or website without citing is considered plagiarism. In written assignments and presentations, all sources used need to be properly cited. I have provided you with an article from the magazine *Math Horizons* discussing plagiarism in mathematical writing.

All cases of cheating and plagiarizing will be dealt with as specified in the Student Code of Conduct, which can be found at [http://www.plu.edu/srr/code-of-conduct/home](http://www.plu.edu/srr/code-of-conduct/home). In particular, if I suspect cheating or plagiarism, it is my duty as your instructor to report it to the Office of Student Rights and Responsibilities.

Classroom Conduct

Learning to read, discuss, and present mathematics—or anything, for that matter—can be stressful. As such, it is imperative that everyone in the class feels welcome to make mistakes and for us all to be respectful of one another while attempting to carefully and tactfully provide helpful and useful feedback for our peers. Impatience, derogatory remarks, derogatory actions, offensive behavior, rude feedback, unhelpful feedback, or any type of discrimination will not be tolerated. We can learn a great deal from each other, and I hope this year allows us the opportunity to do just that. I look forward to working with each one of you as you complete your PLU journey with a degree in mathematics.

Student Support

PLU is committed to overall well-being of its students. If you are struggling academically, emotionally, psychologically, etc., please know that The Center for Student Success serves as a campus-wide network of units dedicated to helping students succeed. The website is: [http://www.plu.edu/student-success](http://www.plu.edu/student-success). Students can find out about Academic Advising and Degree Planning, Tutoring and Assignment Help, Career and Vocation Planning, Personal Health and Wellness, Financial Services, and many affinity group connections. Students can make appointments with advising, the writing center, academic assistance, and many other forms of support. PLU has also established the Student Care Network (SCN) to work with students and partners for a successful academic, social, and emotional experience at PLU. Students, faculty and staff can submit a Care Form (available on the main page of the PLU website under EPass) if they have concerns (academic, emotional, physical or social) related to the well-being of a PLU student. The SCN will work with campus partners to support a culture of care and response for all community members. Please go to: [http://www.plu.edu/srr/student-care-network](http://www.plu.edu/srr/student-care-network) to learn more or to submit a report.