

# Math 498: Senior Research Seminar I

## Fall 2026

## Syllabus

**Professor:** Josh Laison

he/they, Ford 215, [jlaison@willamette.edu](mailto:jlaison@willamette.edu)

**Student Office Hours:** You don't need an appointment to come see me at these times.

Mondays 11:00-12:00

Wednesdays 10:00-11:00

Thursdays 1:00-2:00

You are very welcome to talk with me at other times. If I'm in my office you can drop by without an appointment, or you can schedule an appointment via email to meet in person or over Google Meet.

**Class Meetings:** Ford 201, 8:00-9:30, Tuesday, Thursday  
and one additional hour during the week for your group research meeting

**Course Canvas site:**

<https://willamette.instructure.com/courses/10290>

**Course Web Page:** containing the current schedule of topics and assignments by day:

<http://people.willamette.edu/~jlaison/thesis1.html>

### Graded Components of the Course

|                                                            |             |
|------------------------------------------------------------|-------------|
| Provisional group presentations                            | 15%         |
| Preparation for group research meetings                    | 30%         |
| Math colloquium presentation                               | 30%         |
| Draft of research paper                                    | 15%         |
| Peer feedback on presentations and editing of written work | 10%         |
| <b>Total</b>                                               | <b>100%</b> |

### Course Goals:

In this course students will

- Gain skills in communicating mathematics, formally and informally, verbally and in writing.
- Gain skills in reading mathematics and understanding professional mathematical writing.
- Bring together mathematical content knowledge from multiple courses to use in understanding new ideas.
- Gain experience producing a professional-level mathematical document and presentation that may be presented to the larger research community.
- Take part in an active mathematical research community.

- Gain experience producing original mathematical research.

**Course Content:** In teams of two, you will conduct an independent research project. You will obtain new results, present them to the campus community in the mathematics colloquium, and write up your results in a professional-quality paper.

**Literature review:** Your team will find, work to understand, summarize, present and write about articles related to your research topic. In the first month of class, in rotating teams of two, you'll give short informal presentations about a part of an article you've worked on.

**Group research meetings:** Your team will meet with me once a week for an hour throughout the semester to discuss your research. During many of our meetings, we'll work on your research project. Some of the work of your group will be conducted with me during the meeting, but I'll also expect you to make progress outside of these meetings, and you will be assessed on this progress at each meeting. I will look for evidence of time spent working hard on your project, not necessarily goals achieved. Progress you make that you bring to the meeting should include at least one of the following:

- Passages of an article or text you have read, with explanations of the parts you have understood and questions about the parts you haven't
- New articles that might be relevant to your work you have found
- New questions or conjectures you have posed, with time spent trying to confirm or disprove your conjectures
- Examples that are evidence in support of your questions or conjectures
- Proof ideas or progress on a proof, including failed proof attempts
- New code written or old code updated
- Sections of your paper you have written, or editing and revisions of previous drafts.

**Research paper:** Your team will write a paper in the style of a journal article that includes the results you have found in your research. You should model your writing on research papers you have read this semester and in your previous mathematical career. We will spend several days of class revising and editing our work.

**Collaboration:** In this course, most of your work will be in collaboration with others. It is very important to your success in this course and the success of your research project that you support your collaborators by committing your time and energy to your project. It is unethical, and a violation of the Willamette University Honor Code, to put your name on work that you have not contributed to.

If all members of your research team are working hard and taking this commitment seriously, you should treat results obtained by your research group as belonging to the group – be generous with credit as well as effort.

**Attendance at the Math Department Colloquium:** According to math department policy, since you are enrolled in a 400-level mathematics course, you are required to attend at least 4 mathematics department colloquium talks.

**Important dates:**

Add/drop deadline 9/4  
Labor day (no class) 9/7  
Mid semester day (no class) 10/9  
Withdraw deadline 10/23  
Advising day (no class) 11/3  
Fall break (no class) 11/25 through 11/27  
Last day of class 12/3

**Course Policies**

**Community:** (Adapted from Federico Ardila) This course aims to offer a joyful, meaningful, and empowering experience to every participant. As a community of scholars, our work gets better when we're all invested in a common effort of learning and discovery. We will build that rich experience together by supporting each other. Please be prepared to take an active, critical, patient, and generous role in your own learning and that of your classmates.

**Anti-racism:** (Adapted from the Office of Equity, Diversity and Inclusion) I affirm our commitment to anti-racist action in the coming semester and beyond. I stand in solidarity with those who have been calling for justice and working to end institutionalized racism and white supremacy across the country and at Willamette.

Systemic racism at Willamette University is not an issue that can be addressed superficially. It will take a deep commitment from all parts of our community to make the changes that are necessary, and that is what I offer here: a commitment to gather, build, and act on a clear anti-racist agenda together.

**Land Acknowledgement:** (Adapted from the Dean's Office) Willamette is built on the land of the Kalapuya, who today are represented by the Confederated Tribes of the Grand Ronde and the Confederated Tribes of the Siletz Indians. I offer gratitude for the land, for those who have stewarded it, and for the opportunity to work on it. I acknowledge that our University's history is fundamentally tied to the first colonial developments in the Willamette Valley.

**Diversity and Accessible Education Statement:** (Adapted from the Accessible Education Services Office) Willamette University and I value diversity and inclusion. We are committed to a climate of mutual respect and full participation. My goal is to create a learning environment that is usable, equitable, inclusive and welcoming for people of any gender identity or expression, race, color, national or ethnic origin, religion or religious belief, age, marital status, sexual orientation, or ability.

If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, please notify me as soon as possible. Students with disabilities are also encouraged to contact the Accessible Education

Services office in Smullin 155 at <https://willamette.edu/offices/accessibility> or [accessible-info@willamette.edu](mailto:accessible-info@willamette.edu) to discuss a range of options to removing barriers in the course, including accommodations.

**Religious Accommodations:** (Adapted from the former Office of the Chaplain) I recognize the value of religious practice and I will accommodate your commitment to your religious traditions whenever possible. If you anticipate missing class for religious reasons, please contact me to discuss your needs.

**Time Commitment:** Willamette's Credit Hour Policy expects 2-3 hours of work outside of class for every hour of in-class time. Since this class meets for three hours a week you should anticipate spending between 6 and 9 hours outside of class engaged in course-related activities.

**Academic Integrity:** (Adapted from the Dean's Office) Plagiarism can take different forms, but its essence is presenting the words or work of another person as your own. When you are quoting from, paraphrasing, or using images created by another person in any of your work, you should acknowledge that source in a citation.

On homework assignments, you are encouraged to discuss the homework with fellow students, and get help from your professor, textbook, notes, or calculator, but your submitted written work should be your own. Don't use solutions generated by someone else, including AI. On the quizzes and final exam, you shouldn't consult other sources at all.

**AI policy:** As with any other source, presenting the work of AI as if it was your own is plagiarism. Additionally, many mathematical statements generated by AI are false, and can lead you to misunderstanding if you don't independently verify the results. Using work created by other sources in place of your own, even if it's not your final product, might bypass the learning benefits of the assignment. As with any other source, avoid using information presented by AI in place of your own understanding.