

MATH 499S: SENIOR SEMINAR. Winter, 2018

This class will provide an opportunity for you to reflect on what you have learned as a Mathematics Major at Central Washington by guiding you in assembling a portfolio demonstrating various types of your mathematical work including constructing proofs, communicating mathematics, and individually learning new mathematics.

In this class I expect that you will . . .

- **Check your email and the course website regularly!**
You are expected to keep track of all your responsibilities.
- **Not submit Incomplete or Late Work:** Incomplete work will NOT be accepted for credit. In order to receive full credit for an assignment, it MUST be completed and turned in by class time on the specified due date. Any assignment turned in late, but on or before the following class period will receive a maximum of one-half credit. Any assignment turned in after this date will not be graded and no credit will be given for it.
- **Submit work that meets the assignment format:** To meet the learning objective of technical writing each of the assignments should communicate the fundamental ideas in clear, concise, descriptive English prose. In addition, you will be given many word counts for writing assignments over the course of the quarter. Please consider these word counts as floors, not ceilings. So if asked to reflect for 100 words you must write at least 100.
- **Participate actively in group-work and class discussions:** Each class will be designed to engage you in learning. You will often work in small groups to provide opportunities for each student to talk about the mathematics in the lesson. A part of building understanding is being able to describe what you are thinking and explain your reasoning. You will also need to listen to and critique the reasoning of other students, in a respectful manner. You will be asked to turn in something in each day. This is so you can receive lots of feedback in the preparation of your portfolio.
- **Be smart in your collaboration:** You are encouraged to talk to classmates about your assignments and other problems from classwork but you must complete all individual assignments by yourself. If you do talk with others please indicate who your group members were on your assignment.

Specifically, please be reminded that the Washington State Legislature defines Academic Dishonesty, <http://app.leg.wa.gov/WAC/default.aspx?cite=106-120-027>

Math 499s Portfolio

On the day of the final (Wednesday, March 14 at 8am) you will submit one pdf portfolio which will include:

- I. Paper: What is Mathematics?
- II. Five Mathematics Proofs
- III. Paper: An Application of Mathematics
- IV. Paper: Summary of a mathematical article
- V. Final Presentation

You must complete **all** the portfolio requirements to graduate with your mathematics degree. Each portfolio component is described below with additional details, including rubrics, for each component provided on Canvas.

I. Paper: What is Mathematics?

A three to five page paper addressing the question, “What is mathematics?” We will be doing regular assignments to support writing this essay over the quarter. The final paper should be the introduction to your math portfolio and should refer to your other portfolio requirements.

II. Proofs

This is an opportunity for you to share non-trivial example of each of the following types of proof that you have written in your 300 and 400 level math courses:

- i. Direct Proof
- ii. Contrapositive Proof
- iii. Proof by Contradiction
- iv. Proof by Cases
- v. Proof by Mathematical Induction

Process: Choose a proof that represents a particular proof technique that you proved, not a proof done by a professor in class. Rewrite this proof, correcting, of course, any mathematical errors and clean up any faults in diction and clarity. Then type the proof in \LaTeX using the following format:

Each proof should be typed in \LaTeX and have the following items in the header:

- Your Name
- The Proof Type (in bold)
- A note from which class the proof came from (all proofs should be from 300 or 400 level classes, no 260 proofs).
- A statement of what you’re trying to prove, written in English without mathematical symbols (so write out “for all” or “including” or “sets of”...)

Then you can start the proof.

Timeline: You will submit to me one such proof each week beginning Monday, January 22. Feel free to start submitting these early. It is possible that I may ask you to rewrite your proof. After you begin submitting keep all the proofs in one file, so for example, on the third week you will submit one .pdf with three proofs and each proof should have headers with the information requested above.

IV. Paper: Mathematical Applications

Your three to five page paper should present an application of mathematics at or above the calculus level. You can choose an application that you learned in one of your courses, as part of an REU, as part of an independent study, or something you picked up anywhere else. You should include background information about the application so that a mathematical reader can follow the paper. You should also provide some mathematical content. You should check whether your topic is appropriate with the instructor prior to writing the paper. You should also consult with the instructor to insure that you include enough mathematical material.

III. Paper: Summarizing a Math Article

To support your paper on mathematical applications you will write a three to five page paper summarizing the mathematical logic and reasoning in a mathematical article.

V. Presentation

To end the course you will prepare a presentation summarizing the mathematical application and present it to your colleagues on the last day of class or the day of the final, Wednesday, March 14 at 8am. It is expected that you will attend all final presentations.

Math 499s Grading

After all aspects of the portfolio are submitted, the final grades for Math 499s will be assessed in each of the following categories described above as follows:

Category	Percentage of final grade
Class Participation and in-class work	10%
Portfolio: Mathematics Proofs	20%*
Portfolio: Paper, What is Mathematics?	20%*
Portfolio: Paper, An Application of Mathematics	20%*
Portfolio: Paper, Summary of a mathematical article	15%*
Portfolio: Final Presentation	15%*

* All five aspects of the Math 499s Portfolio must be submitted to pass Math 499s.

Details about the portfolio are described above and the grading rubric for each of these items will be available via Canvas. To support your success in developing these portfolio components, there is also an in-class work component:

In-Class Work and other Assignments

Attendance will be taken and homework will be assigned regularly to be turned in at the beginning of class. No late homework will be accepted without a university accepted excuse note. The work in class will support the creation of your mathematical portfolio.

If all components of the portfolio are submitted the following table reflects the planned letter grade for the course structure:

Total Score	100-93	92-90	89-87	86-83	82-80	79-77	76-73	72-70	69-67	66-63	62-60	59-0
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

If any elements of the portfolio are not submitted then you will not pass the Math 499s course.

University Policies

Religious Holidays: Reasonable accommodations will be made for you to observe religious, holidays when such observances require you to be absent from class activities. It is your responsibility to inform the instructor during the first two weeks of class, in writing, about such holidays.

Academic Integrity: While completing this course you must follow the CWU Student Code of Conduct which is defined by Washington State. Please be reminded that the Washington State Legislature defines Academic Dishonesty in all its forms including, but not limited to the following:

- Cheating on tests.
- Copying from another students test paper.
- Using materials during a test not authorized by the person giving the test.
- Collaboration with any other person during a test without authority.
- Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an unadministered test or information about an unadministered test.
- Bribing any other person to obtain an unadministered test or information about an unadministered test.
- Substitution for another student or permitting any other person to substitute for oneself to take a test.
- “Plagiarism which shall mean the appropriation of any other persons work and the unacknowledged incorporation of that work in ones own work offered for credit.
- “Collusion which shall mean the unauthorized collaboration with any other person in preparing work offered for credit.

For more details visit: <http://app.leg.wa.gov/WAC/default.aspx?cite=106-120-027>

Support Services/ Accommodations: Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with me. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information. Also, please let me know if you need me to accommodate for a disability in anyway, I am glad to do so!

Incompletes: The College Policy on Incompletes states that Incompletes are used when the student was not able to complete the course by the end of the term, but has satisfactorily completed a sufficient portion of it and can be expected to finish without having to re-enroll in it. In this course, students who have not completed substantial coursework should not assume that they will be given an incomplete at the end of the semester. If you have concerns about this you should talk to the course instructor and your academic advisor.

Summary of Important Dates: See <https://www.cwu.edu/calendar> to verify any dates

Jan 9	Change of Schedule Period Ends (Add/Drop classes) <i>(Drops completed prior to this date or by the close of business on this date will not appear on transcripts or have tuition assessed).</i>
Jan 9	Deadline to declare audit & credit/no credit grading.
Jan 15	Martin Luther King Jr. Holiday, No class will be held.
Feb 1	Deadline for 50% refund with complete withdrawal
Feb 19	President’s Day Holiday, No class will be held.
Feb 16	Uncontested withdrawal period deadline
Mar 9	Withdrawal from classes or university. <i>Not permitted except for “serious and compelling reasons.”</i>

Course Components

Class Meeting Time

Monday 11:00-11:50 AM Black Hall 134
Wednesday 11:00-11:50 AM Black Hall 134

Question/Answer Office Hours

MTWTh 12:30-1:30 pm Bouillon 108D

Office Hours may be changed to meet the needs of the class. Additional office hours are available via appointment, please email the instructor to schedule these meetings.

Website: Course materials will be posted and collected via Canvas.

Contact Information

Instructor: Brandy Wiegers, PhD
Email: brandy.wiegers@cwu.edu
Office: Bouillon 108D
Phone: (509) 963-2125
Website: <http://www.cwu.edu/math/dr-brandy-wiegers>

The best way to contact the instructor is at office hours or via email. Expect a 12-24 hour delay in response. If you haven't received a response within 24 hours of the original email please contact the professor again.

Assignment Due Dates

There will be regular in-class work and homework to support the creation of your mathematical portfolio. This will be assigned in a timely manner to support the following due dates for the portfolio components:

Item	Topic Due	Draft Due	Final Paper Due	Grading Reflection Due
What is Mathematics?		Jan 24 & Feb 21	Feb 28	Mar 7
An Application of Mathematics	Jan 17	Feb 14	Feb 21	Mar 7
Summary of Article	Jan 24	Jan 31	Feb 7	Feb 21
Final Presentation	Feb 14	Feb 28	Mar 7	

For the most up-to-date information about course assignments visit the Canvas webpage.

Incomplete work will NOT be accepted for credit. In order to receive full credit for an assignment, it MUST be completed and turned in by class time on the specified due date. Any assignment turned in late, but on or before the following class period will receive a maximum of one-half credit. Any assignment turned in after this date will not be graded and no credit will be given for it.

Syllabus Changes: I reserve the right to change the policies contained in this syllabus as dictated.