Math 411 Syllabus	Fall 2019	Laurel Langford
College Geometry	12:00-12:50 MWF NH 16	laurel.langford@uwrf.edu
Section 1; Credits: 3	Final exam: 1-3 pm 12/17/18	http://langfordmath.com/

Office hours (getting help): I will be available in my office to answer questions (207B NH; office phone 715-425-4360) MWF 10:00-11:50. I am around a lot during the day when I am not in class, and I am (almost) always happy to see you (it is a good idea to make an appointment if you are able to plan ahead).

Text: you should have the textbook Geometry From Euclid to Knots by Stahl (1st ed.)

Announcements and the most recent theorems list are posted on my web site: http://langfordmath.com/. I will be posting your scores on D2L. Sometimes there are problems (both human and machine errors). **Please save your graded work until after you have checked your grades in D2L to make sure I have scores recorded correctly.**

Goals for this class:
- Understand how results (theorems) are built from assumed properties (axioms) in mathematics.
- Be able to prove theorems in Euclidean geometry
- Understand the foundational theorems in Euclidean geometry
- Understand some of the results of making different assumptions about basic properties in a geometric system (in particular in the historically significant cases of spherical and hyperbolic geometry).

Assignments:
As we go through the course, you will be (re-) proving many of the theorems of elementary geometry. We as a class will be building geometry from the ground up, where our "ground" is a set of axioms. Your main tasks will be:
- figuring out how to prove geometry theorems
- writing up your proofs (you will be turning in work regularly)
- sharing your proofs with the class (see presentations)

There will also be some supporting homework assignments that are not explicitly asking you to prove theorems.

Presentations: I will provide frequent opportunities for you to volunteer to present your ideas and your proofs of the currently assigned theorems. I expect everyone to share their work on a regular basis. Grading is based on how often you present, and also the quality of your explanations: is the proof correct? Is it clear and easy to follow?

Tests: There will five tests (every 2-3 weeks) and a (somewhat) comprehensive final exam. These will comprise the majority of your grade.

Grading: Your grade will be based primarily on your scores on homework, presentations, quizzes and the final exam. Homework will count as 15% of your grade, presentations 5%, and the quizzes and final exam will count as 80% of your grade. Your grade will be based primarily on the weighted average of your scores. Letter grades will be at least as high* as those determined by your weighted average and these percents:

| A: 94-100% | A-: 90-93% | B+: 87-89% | B: 84-86% | B-: 80-83% |
| C+: 77-79% | C: 74-76% | C-: 70-73% | D+: 67-69% | D: 60-66% |

*I will occasionally raise a grade for someone who shows a greater understanding of the content (eg. in class discussions and presentations) than is reflected in the test scores, but I never lower a grade below what is indicated by the weighted average).

Late work: Late work will be accepted at my convenience. Late work may earn partial or full credit, depending on when it is turned in (see longer syllabus in D2L for details).

The UWRF promotes safe, inclusive and effective learning environments that protect the rights and support the interests of both students and faculty. For additional information regarding our inclusivity expectations, academic accommodations, academic conduct expectations and processes, and other syllabi information, please consult http://go.uwrf.edu/Syllabi

Teacher Content Standards: Information about teacher content standards covered by this course can be found at: https://www.uwrf.edu/MATH/WisconsinContentTeacherStandardsMathematicsCourses.cfm.

An expanded version of this syllabus is available in the Content section of the Canvas web site

Appendix/expanded syllabus

More on Late Work: Typically, if the work is turned in before I have a chance to grade that assignment, your work will be graded with the rest of the class. If you turn in work after I have graded the assignment for the rest of the class, you may still get full credit if your work is late due to an excused absence (circumstances beyond your control: illness, car in need of towing on the way to class, etc), and you have documentation verifying the reason for the absence. Vacations are not excused absences. If you do not have a verifiable excused absence, you may still get partial credit (about 50%) if the work is done in a reasonable amount of time (approx. 1 week).

Missed tests can be made up for partial credit (75%) if you contact me promptly (I should hear from you before the next class meeting if you miss an exam), and reschedule to take the exam promptly. I may choose to allow a late exam for full credit in cases of an excused absence (see above). If you are missing an exam for a university sponsored event, you should be contacting me in advance to schedule your test. As with final grades, I may choose to give higher amounts of partial credit depending on the circumstances.

Teacher Content Standards: The College of Arts and Sciences has a webpage that links you to the teacher content standards by course number. " DPI CONTENT STANDARDS: The State of Wisconsin has established content standards that education programs are required to have in their courses. These standards are the basis of the Praxis II Content exams that all licensure candidates are required to pass prior to receiving a license to teach in Wisconsin." Linked by course number from this page: https://www.uwrf.edu/MATH/WisconsinContentTeacherStandardsMathematicsCourses.cfm.

Course Objectives
At the end of this course students will be able to:
Explain the differences between Euclidean and non-Euclidean geometries, including differences in the axiomatic systems.
Explain congruence using transformational reasoning.
Make reasonable geometric conjectures
Explain the foundational theorems and proofs of Euclidean geometry
Prove theorems about triangles, quadrilaterals and other plane figures.

Required Course Content
Comparing geometries:
>--Comparison of Euclidean, Spherical and Hyperbolic geometries, with exploration of parallels, congruence and angle sums. The importance of Separation as a geometry axiom.
>--The role of axioms in defining a geometry. Comparison of axioms for Euclidean, Spherical and Hyperbolic geometries

Proving results in an axiomatic system:
>--Defining transformations as part of an an axiomatic system
>--Using transformations to understand and prove theorems about triangle congruence
>--Proofs of foundational Euclidean geometry results, including triangle congruence and parallels
>--Basic constructions in Euclidean geometry, including perpendiculars, parallels and congruent triangles
>--Understanding the roles of conjecture and proof in an axiomatic system: conjecturing and proving about special quadrilaterals.
>--Area of parallelograms and triangles
>--Similar triangles

Mode of Instruction: Face to Face

Prerequisites: Math 256 and 236 or a grade of B or better in Math 236.

Scheduled Units (exams will be scheduled between units):
1. Transformations
2. Axiomatic systems and non-Euclidean geometry
3. Neutral geometry: triangle congruence theorems
4. Non-neutral geometry: parallels and quadrilaterals
5. Areas and the Pythagorean Theorem
6. Similar triangles

Projected exam dates are available at: http://langfordmath.com/M411/411F2018/411index2018.html

Academic Integrity

Language regarding the University of Wisconsin-River Falls Academic Misconduct code, including a discussion of the appropriate policies and procedures to be followed in any case of potential misconduct, is located here.

"UWS Chapter 14 is the chapter of the University of Wisconsin System Administrative code that regulates academic misconduct" for all campuses in the UW System and outlines the process by which the code is adjudicated.

UWS 14.03 defines academic misconduct as follows:

Academic misconduct is an act in which a student:
- seeks to claim credit for the work or efforts of another without authorization or citation;
- uses unauthorized materials or fabricated data in any academic exercise;
- forges or falsifies academic documents or records;
- intentionally impedes or damages the academic work of others;
- engages in conduct aimed at making false representation of a student's academic performance;
- assists other students in any of these acts.

Examples include but are not limited to:
- Cutting and pasting text from the web without quotation marks or proper citation
- Paraphrasing from the web without crediting the source;
- Using notes or a programmable calculator in an exam when such use is not allowed;
- Using another person's ideas, words, or research and presenting it as one's own by not properly crediting the originator; stealing examinations or course materials;
- Changing or creating data in a lab experiment;
- Altering a transcript;
- Signing another person's name to an attendance sheet;
- Hiding a book knowing that another student needs it to prepare an assignment;
- Collaboration that is contrary to the stated rules of the course, or tampering with a lab experiment or computer program of another student.

If you are suspected of misconduct, you may have questions and concerns about the process. If so, you should feel free to call the Office of Student Conduct & Community Standards at 715-425-4844, send an email, and/or consult its website for additional information.

Inclusivity, Respect, and Ability/Disability Expectations

1. The University of Wisconsin-River Falls strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment. If you have concerns about such behavior, contact your instructor, the Office of Student Conduct and Community Standards at 715-425-4844, or the Office of Equity, Diversity, and Inclusion at 715-425-3833. For a list of prohibited behaviors and protected classes or to report something that is inappropriate using an online process, go to this page.

2. The University of Wisconsin-River Falls is committed to upholding standards that promote respect and human dignity in an environment that fosters academic excellence and professionalism. Sexual misconduct and relationship violence in any form are antithetical to the university's mission and core values, violate university policies, and may also violate federal and state law. Faculty members are considered "Responsible Employees" and are required to report incidents of sexual misconduct and relationship violence. If you or someone you know has been impacted by sexual assault, dating and domestic violence, stalking, or sexual exploitation, please visit Title IX to access information about university support and resources.

3. The University of Wisconsin-River Falls welcomes students with disabilities into its educational programs, activities, residential halls, and everything else it offers. Those who will need academic adjustments or accommodations for a disability should contact the Ability Services Office. Decisions to allow adjustments and accommodations are made by the Ability Services Office on the basis of clinical documentation that students provide to sufficiently indicate the nature of their situation.