Syllabus Foundations of Geometry  MATH 2150
Spring 2023.

**MATH:2150 Foundations of Geometry 3 s.h.**

From the catalogue: Axiomatic development of common foundation for Euclidean, non-Euclidean geometry; constructions of non-Euclidean models, independence of parallel postulate. Prerequisites: MATH:1860 or MATH:1560.

Course Title is

**Foundations of Geometry**

**MATH:2150:0001 Prerequisites: MATH:1860 or MATH:1560 3 s.h.**

Delivery Mode:

Start and end times: 3:30P - 4:20P MWF 105 MLH

Instructor: Palle Jorgensen (Primary Instructor)

Contact Information.

- Instructor: Palle Jorgensen, Office 25B MLH (or by appt in 3350782)
- Palle Jorgensen, palle-jorgensen@uiowa.edu  Office Hour: 1:00-2:00 pm, MWF, or by appointment, office MLH 25b, ph 319 3350782.

DEO Contact Information:
Professor Ryan Kinser, 14 MLH, Kinser, Ryan D ryan-kinser@uiowa.edu

- All announcements and assignments for this course will appear on ICON.
- All digital course materials will be posted to ICON.

http://icon.uiowa.edu/

Goals and Objectives

**Required book:**
The course and the classes will follow the textbook: Axiomatic Geometry, By John M. Lee.

Book details: Title, author, publisher ISBN.

**Axiomatic Geometry (the AMS series: Pure and Applied Undergraduate Texts)**

by John M. Lee  Publisher : American Mathematical Society AMS (May 11, 2013.)

Hardcover : 472 pages
Summary. Axiomatic development of common foundation for Euclidean, non-Euclidean geometry; constructions of non-Euclidean models, independence of parallel postulate. The story of geometry is the story of mathematics itself: Euclidean geometry was the first branch of mathematics to be systematically studied and placed on a firm logical foundation, and it is the prototype for the axiomatic method that lies at the foundation of modern mathematics. It has been taught to students as a model of logical thought. The course will tell the story of how the axiomatic method has progressed from Euclid’s time to ours, as a way and language for our understanding what mathematics is: how we read and evaluate mathematical arguments, and why mathematics has achieved the level of certainty it has. It is designed primarily for undergraduates who plan to teach secondary school geometry, but it should also provide something of interest to anyone (pure and applied) who wishes to understand geometry and the axiomatic method better that lies at the foundation of mathematics.

In more detail. The course introduces a modern, rigorous, axiomatic treatment of Euclidean and (to a lesser extent) non-Euclidean geometries, offering students ample opportunities to practice reading, understanding, and writing proofs -- while at the same time developing concrete geometric relationships that secondary teachers will need to know in the classroom.

Prerequisites: MATH:1860 or MATH:1560 with a minimum grade of C-.

You can contact me about queries on this and related matters.

Homework and Participation

Problems from the text will be assigned once a week on ICON. Students may wish to work on homework with partners, with help from a TA, the professor or supplemental instructor. These homework assignments will be uploaded to ICON and graded for credit.

Expectations. Students are expected to attend all lectures and do all of the homework regularly. The participation score will reflect student attendance.

Students are responsible for everything covered in the lectures, textbook and the prerequisites.

Students are expected to read the course content from the textbook before the lectures. Students are not expected to understand the course content from the textbook before the lectures.

Important announcements about changes (if necessary) to the syllabus, homework, exams, etc. will be done in the lectures, Maui, or ICON.

Student Collaboration: Students may collaborate on homework assignments. Any tests, quizzes or other materials should be completed without collaboration unless otherwise specified.

Quizzes and Exams:

There will be quizzes on most weeks.

Taking all quizzes and exams (midterms and final) is mandatory.

There will be two midterms. The dates are given in Important Dates below.

There will be a final exam.

The exams will be cumulative.

There will be no make-up exams or quizzes. If you believe that you have an exceptional circumstance, please notify me in advance. In case of illness I will ask for a doctor's note.

In the event that you get sick, please let me know by email immediately. A positive COVID test from Urgent Care represents a valid excuse for missing class time. You
will be expected to make up missed assignments.

**Grading.**
A grade will be assigned to each class participant using their scores in the following proportions:
- 20% Midterm 1
- 20% Midterm 2
- 30% Final exam (Cumulative)
- 15% Quizzes, through ICON most weeks
- 10% Homework, assigned once per week.
- 5% Participation, based attendance.

**Academic Honesty**
There will be serious consequences for anyone caught cheating in any way. Cheaters will be punished according to the standards and practices of the University of Iowa. This may include being reported to CLAS and receiving an "F" on any fraudulent tests or quizzes.

**Other Policies**
- I will not give an incomplete to someone who is failing the class.
- I reserve the right to modify the course syllabus at any time.
- Students must maintain standards of behavior and basic decorum.
- You may not use any cell phones, computers or calculators on tests. Graphing calculators, cellphones, computers or smart watches are not allowed on tests.

**Other Course Resources.**
Help is available through the Math Tutorial Lab, see https://math.uiowa.edu/math-tutorial-lab
You are strongly encouraged to attend office hours as needed.

**Important Dates.**
- 1/17: First day of class
- 2/13: Withdraw deadline
- 3/8: Midterm 1 (in class)
- 3/11-3/20: Spring Break
- 4/3: Drop deadline
- 4/8: Midterm 2 (in class)
- 5/5: End of class
- 5/8-5/12: Exam week (Exam time TBA)

**Tentative Lecture Schedule.**
Week Book: Chapter, sections, Subjects:
1 1 Proof basics, history
2 2 Incidence Geometry
3 3 Axioms for plane geometry
4 4 Angles
5 5 Triangles
6 6 Models
7 7 Perpendicular and parallel lines
College of Liberal Arts and Sciences (CLAS) Course Policies

**Attendance and Absences**
Instructors: **Describe all attendance, absence and late work policies in detail.** Be as clear as possible about the absence policy for the course and consider asking students to use the CLAS absence form on ICON under Student Tools. Please add a statement regarding the following UI policy and the documentation you will require to excuse an absence: University regulations require that students be allowed to make up examinations which have been missed due to illness or other unavoidable circumstances. Students with mandatory religious obligations or UI authorized activities must discuss their absences with me as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Instructors: Outline other course policies as needed.

**CLAS Exam Policies**

**Communication: UI Email.**

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community.

**Other Expectations of Student Performance.**
We have expectations for civil behavior in class; e.g., for absence of disturbances of the class involving technology, phones, and devices which can distract students sitting near by the user. Students have the right to a distraction-free learning environment. Students may help each other learn in class and contribute to an overall learning environment. Arriving prepared for class is part of this expectation.

**Where to Get Help.**
Instructors: Note any department or university resources helpful for this course, such as Tutor Iowa: [https://tutor.uiowa.edu/](https://tutor.uiowa.edu/)

**University Policies**

Accommodations for Students with Disabilities
Basic Needs and Support for Students
Classroom Expectations
Exam Make-up Owing to Absence
Free Speech and Expression
Mental Health
Military Service Obligations
Non-discrimination
Religious Holy Days
Sexual Harassment/Misconduct and Supportive Measures
Sharing of Class Recordings

University. CLAS Insert.

Attendance and classroom expectations.
Students are responsible for attending class and for knowing an instructor's attendance policies, which vary by course and content area. All students are expected to attend class and to contribute to its learning environment in part by complying with University policies and directives regarding appropriate classroom behavior or other matters.

Absences.
Students are responsible for communicating with instructors as soon they know that an absence might occur or as soon as possible in the case of an illness or an unavoidable circumstance. Students can use the CLAS absence form to help communicate with instructors who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under "Student Tools." Delays by students in communication with an instructor could result in a forfeiture of what otherwise might be an excused absence (https://clas.uiowa.edu/students/handbook/attendance-absences).

Absences: illness, unavoidable circumstances and university sponsored activities
Students who are ill, in an unavoidable circumstance affecting academic work, or who miss class because of a University sponsored activity are allowed by UI policy to make up a missed exam. Documentation is required by the instructor except in the case of a brief illness. Students are responsible for communicating with instructors as soon as the absence is known (https://opsmanual.uiowa.edu/students/absences-class#8.1).

Absences/Holy days.
Reasonable accommodations are allowed for students whose religious holy days coincide with their classroom assignments, tests, and attendance if the student notices the instructor in writing of any such religious Holy Day (See the UI Operations Manual, https://opsmanual.uiowa.edu/students/absences-class#8.2).

Absences/Military service obligations.
Students absent from class due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) must be excused without penalty. Instructors must make reasonable accommodations to allow students to make-up exams or other work. Students must communicate with their instructors about the expected possibility of missing class as soon as possible. (For more information, see https://opsmanual.uiowa.edu/iv-8-absences-class%C2%A0-%200).

Academic Misconduct.
All undergraduates enrolled in courses offered by CLAS have in essence agreed to the College's Code of Academic Honesty. Academic misconduct affects a student's grade and is reported to the College which applies an additional sanction, such as suspension. Outcomes about misconduct are communicated through UI email (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

Academic accommodations for students with disabilities.
UI is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as a mental health, attention, learning, vision, and a physical or health-related condition) through the Student Disability Services (SDS) office. The student is responsible for discussing specific accommodations with the instructor. Note that accommodations are not granted retroactively but from the time of the student's request to the instructor onward; additionally, accommodations must be requested at least two weeks in advance of the related assignment or exam (https://sds.studentlife.uiowa.edu/).

Class recordings: privacy and sharing.
Course lectures and discussions are sometimes recorded or live-streamed. These are only available to students registered for the course and the intellectual property of the faculty member. These materials may not be shared or reproduced without the explicit written consent of the instructors. Students may not share these recordings with those who are not enrolled in the course; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and could be a violation of the Federal Education Rights and Privacy Act (FERPA); also see https://dos.uiowa.edu/policies/code-of-student-life/.

Communication: UI email.
Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community (Operations Manual, III.15.2). Emails should be respectful and brief, with complex matters addressed during the instructor's drop-in hours, for example. Faculty are not expected to answer email after business hours or during the weekends.

Complaints about academic matters.
Students with a complaint about a grade or a related academic issue should first visit with the instructor and then with the course supervisor (if one is assigned), and next with the Chair/DEO of the department or program offering the course. If not resolved, students may bring their concerns to the College of Liberal Arts and Sciences: https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

Final examination policies.
The final exam schedule is published during the fifth week of the fall and spring semesters or on the first day of summer classes; students are responsible for knowing the date, time, and place of their final exams. Students should not make travel plans until knowing this information.
student with exams scheduled on the same day and time or who have more than two final exams on the same day should visit this page for how to resolve these problems by the given deadline: https://registrar.uiowa.edu/makeup-final-examination-policies. No exams may be scheduled the week before finals; some exception, however, have been made for labs, language courses, and off-cycle courses (https://registrar.uiowa.edu/finalexamination-scheduling-policies).

Free speech and expression.
The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit Free Speech at Iowa for more information on the University's policies on free speech and academic freedom (https://freespeech.uiowa.edu).

Home of the course. The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the course's add and drop deadlines, the "second-grade only" option (SG0), and other undergraduate policies and procedures. Different UI colleges may have other policies or deadlines. See https://clas.uiowa.edu/students/handbook.

Questions? Contact CLAS at clasps@uiowa.edu or 319-335-2633.

Mental health.
Students are encouraged to seek help as a preventive measure or if feeling stressed or overwhelmed. Students should talk to their instructors for guidance with specific class-related concerns and are encouraged to contact University Counseling Service (UCS) at 319-335-7294 during regular business hours to schedule an appointment. USC offers group and individual therapy as well as counseling for couples about relationships while making referrals to other resources (https://counseling.uiowa.edu).

Student Health can also address related concerns (https://studenthealth.uiowa.edu).

These visits are free to students. After hours, students are encouraged to call the Johnson County Community Crisis Line at (319) 351-0140 or dial 911 in an emergency.

Nondiscrimination in the classroom.
Respectful and inclusive. The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals based on race, class, gender, sexual orientation, national origin, and other identity categories indicated by the University's Human Rights policy. Contact the Office of Equal Opportunity and Diversity at https://diversity.uiowa.edu/division/o_ce-equal-opportunity-and-diversity-eod.

Sexual harassment.
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff; all members of the UI community are expected to conduct themselves in a manner that maintains an environment free from sexual harassment and sexual misconduct. Those experiencing sexual harassment are strongly encouraged to report the incidents and to seek help (https://osmrc.uiowa.edu).