

**Title of Course: MATH 7450:0001 Current Geometry and Topology II**

**Course meeting time and place:**

**Lecture: 11:30P – 12:20P MWF, 105 MLH**

**Department of Mathematics:** <https://math.uiowa.edu/>

**Course ICON site:** To access the course site, log into [Iowa Courses Online \(ICON\)](#) <https://icon.uiowa.edu/index.shtml> using your Hawk ID and password.

### **Course Home**

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, the “second-grade only” option (SGO), academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

**Instructor: Keiko Kawamuro**

Office location: **25H MLH**

Office hours: **Tue and Thur: 9:00 – 10:00 in 25H MLH; Fri 1:30 – 2:30 in 25H MLH; or by appointment.**

Phone: **(319)335-0792**

E-mail: [keiko-kawamuro@uiowa.edu](mailto:keiko-kawamuro@uiowa.edu)

**TA:** None.

**DEO:** Professor Ryan Kinser, [ryan-kinser@uiowa.edu](mailto:ryan-kinser@uiowa.edu), 14 MLH

### **Description of Course**

Nielsen-Thurston’s theorem states that surface homeomorphisms fall into three types, periodic, reducible and pseudo-Anosov. In this course we study properties of pseudo-Anosov maps and application to hyperbolic geometry.

### **Learning Objectives**

Teichmüller spaces of torus and hyperbolic surfaces. Fenchel-Nielsen coordinates. Nielsen-Thurston

classification of mapping classes. Pseudo-Anosov homeomorphisms. Train tracks. Foliations. Taut foliations. Measured foliations.

### **Textbook/Materials**

**The lectures are based on the following books and papers.**

**Benson Farb and Dan Margalit: A primer on mapping class groups (Princeton Mathematical Series)**

**Mehdi Yazdi: Foliations and three-dimensional manifolds**

**Danny Calegari: Foliations and the Geometry of 3-manifolds**

### **Material to be covered.**

Chapter 10 of Farb-Margalit's book: Teichmuller space

Chapter 11.2 of Farb-Margalit's book: Measured foliations

### **Mehdi Yazdi's lecture note: Foliations and three-dimensional manifolds**

Chapter 13 of Farb-Margalit's book: The Nielsen-Thurston classification

Chapter 14 of Farb-Margalit's book: Pseudo-Anosov theory

### **Academic Honesty and Misconduct**

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#).

### **Student Complaints**

**Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.**

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS [Associate Dean for Graduate Education](#) and Outreach and Engagement when additional support is needed.

### Drop Deadline for this Course

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the [drop deadline for this course](#) here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the [Registrar’s website](#). Undergraduate students can find policies on dropping and withdrawing [here](#).

### Grading System and the Use of +/-

**Grading System: Plus/minus** grading will be used.

50% Class participation

Students will be asked to answer small questions during the lecture. Actively asking questions is also part of participation.

50% Presentation

Each student will be required to present some theorems or examples that are related to the course topics. The instructor will meet each student and discuss the presentation plan.

### Date and Time of the Final Exam

The final examination (presentation) will be done during the lecture time.

### Attendance and Absences

*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.*

## **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. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.*

**Student Collaboration:** Student collaboration is encouraged.

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at [counseling.uiowa.edu](https://counseling.uiowa.edu). Find out more about UI mental health services at [mentalhealth.uiowa.edu](https://mentalhealth.uiowa.edu).

**Student Care and Assistance** provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at [basicneeds.uiowa.edu/resources/](https://basicneeds.uiowa.edu/resources/). Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, [dos-assistance@uiowa.edu](mailto:dos-assistance@uiowa.edu), or 319-335-1162) for support and assistance with resources.

## **Accommodations for Students with Disabilities**

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated. The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

**University Policies**

**Classroom Expectations**

**Free Speech and Expression**

**Non-discrimination**

**Absences for Religious Holy Days**

**Sexual Harassment/Misconduct and Supportive Measures**

**Sharing of Class Recordings**