

MATH 506 Ergodic Theory

Spring 2023

Class meets: Monday, Wednesday, Friday 11:15 a.m. - 12:05 p.m. in 106 McAllister

Instructor: Dr. Victoria Sadovskaya (you may call me Victoria)

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Office: 426 McAllister

Office hours: Monday 1:40 - 3:00 p.m., Wednesday 10:20 - 11:00 a.m.,
and by appointment. You are also welcome to ask questions by email.

Course description: We will study measure-preserving transformations of finite measure spaces. We will discuss the fundamental notions and results in Ergodic Theory. The topics will include ergodicity, ergodic theorems, mixing, weak mixing, isomorphism, spectral invariants, and entropy. We will illustrate these concepts with algebraic and topological examples.

Prerequisite: Math 501.

Text (recommended): *An Introduction to Ergodic Theory* by Peter Walters,
ISBN-13: 978-0387951522.

We will focus on Chapters 1, 2, 3, and 4. Additional topics may be covered if time permits.

Canvas: The course materials, including the syllabus, daily schedule, homework assignments, and announcements will be posted on Canvas.

Homework will be assigned and collected on a regular basis. Solutions must be neatly and clearly written or typed. You may use statements proved in class and results of previous homework assignments. You may discuss general approaches to problems with me and with other students, but you must write solutions on your own. You may not copy solutions from any source. The lowest homework score will be dropped.

Attendance: Regular attendance is expected. If you have to miss a class, please visit Canvas or email me to find out what was covered. You will need to study the book or class notes to learn the material covered that day.

Please notify me if you have to miss more than one class.

Grading Policy:

The grade will be based on the homework (85%), and attendance and participation (15%). It will be calculated as follows:

A	88 - 100 %	A-	84 - 87.9 %	B+	80 - 83.9 %	B	76 - 79.9 %
B-	72 - 75.9 %	C+	68 - 71.9 %	C	64 - 67.9 %	D	50 - 63.9 %

Academic Integrity is the pursuit of scholarly activity in an open, honest and responsible manner. It is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

Disability accommodation:

Penn State welcomes students with disabilities into the University's educational programs. Student Disability Resources (SDR) website provides contact information for every Penn State campus <http://equity.psu.edu/sdr/disability-coordinator>.

For further information, please visit <http://equity.psu.edu/sdr/>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office, participate in an intake interview, and provide documentation (<http://equity.psu.edu/sdr/guidelines>). If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

Counseling and psychological services: Many students face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Counseling and Psychological Services at University Park (CAPS)

<http://studentaffairs.psu.edu/counseling/> 814-863-0395

Penn State Crisis Line (24 hours/7 days/week): 877-229-6400

Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

Reporting Educational Equity Concerns: Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated and can be reported through Educational Equity via the University's Report Bias webpage <http://equity.psu.edu/reportbias/>