

MAT 319: Foundations of Analysis

Fall 2023

Department of Mathematics
Stony Brook University

Important Note: Every effort will be made to avoid changing the course schedule, but the possibility exists that unforeseen events will make syllabus changes necessary. It is your responsibility to check the course website for corrections or updates to the syllabus. Any changes will be clearly noted in course announcements or through Stony Brook email.

Course Description: A careful study of the theory underlying topics in one-variable calculus, with an emphasis on those topics arising in high school calculus. The real number system. Limits of functions and sequences. Differentiation, integration, and the fundamental theorem. Infinite series.

Textbook (required): Introduction to Real Analysis by Robert G. Bartle and Donald R. Sherbert, 4th edition.

Prerequisites: C or higher in MAT 200 or MAT 250 or permission of instructor; C or higher in one of the following: MAT 203, 211, 220, 307, AMS 261, or A- or higher in MAT 127, 132, 142, or AMS 161.

Instructor: Dimitrios Ntalampekos. Email: dimitrios.ntalampekos@stonybrook.edu. Office hours and Math Learning Center (MLC) hour:

<http://www.math.stonybrook.edu/cards/ntalampekosdimitrios.html>

Class Schedule: Tuesday and Thursday at 1:00-2:20pm in Javits Lecture Hall 110. Students are expected to attend class and recitation regularly and to keep up with the material presented in the lecture and the assigned reading.

Course Assistants:

- Spencer Cattalani. Email, office hours and Math Learning Center (MLC) hour:
<https://www.math.stonybrook.edu/cards/cattalanispencer.html>
 - Recitation R01 on Monday and Wednesday at 11:00am-11:55am in Library E4310.
 - Dylan Galt. Email, office hours and Math Learning Center (MLC) hour:
<https://www.math.stonybrook.edu/cards/galtdylan.html>
 - Recitation R02 on Monday and Wednesday at 11:00am-11:55am in Earth & Space 131.
 - Daniil Glukhovskiya. Email, office hours and Math Learning Center (MLC) hour:
<https://www.math.stonybrook.edu/cards/glukhovskiydaniil.html>
 - Recitation R03 on Monday and Wednesday at 11:00am-11:55am in Frey Hall 224.
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Course Learning Objectives: The purpose of this course is to build rigorous mathematical theory for the fundamental calculus concepts, sequences and limits, continuous functions, and derivatives. We will rely on our intuition from calculus, but (unlike calculus) the emphasis will be not on calculations but on detailed understanding of concepts and on proofs of mathematical statements.

Course Schedule: The first lectures, until Midterm I, will be joint between MAT 319 and MAT 320. After that, we will provide each student with a recommendation for continuing in MAT 319 or MAT 320. These will be based on the performance in the homework and first midterm.

The course schedule for the joint lectures (MAT 319 and MAT 320) is posted in the following website and is **subject to changes**.

<https://www.math.stonybrook.edu/~schul/MAT320fall123/>

The course schedule for MAT 319 is posted in the following website and is **subject to changes**.

http://www.math.stonybrook.edu/~dimitriosnt/teaching/MAT319_fall2023/schedule_MAT319_fall2023.html

Grading Policy: Homework: 20%, Midterm I: 20%, Midterm II: 20%, Final: 40%

Homework: Weekly problem sets will be assigned and collected in **Wednesday recitation**. The emphasis of the course is on writing proofs, so please try to write legibly and explain your reasoning clearly and fully. You are encouraged to discuss the homework problems with others, but your write-up must be your own work.

- *Late homework will never be accepted*, but under documented extenuating circumstances the grade may be dropped.
- *Your lowest homework grade will be dropped* at the end of the class.

Exams: There will be **two** Midterms as well as a Final exam. By enrolling in this course, you are attesting to the fact that you will be available for the exams at the following times:

- **Midterm I** will be on Tuesday, October 3, during the time of the lecture.
- **Midterm II** will be on Tuesday, November 7, during the time of the lecture.
- The **Final** exam will be on Thursday, December 14, at 11:15am-1:45pm.

Basis of grade determination: A- and A 85-100%; B-, B, and B+ 65-85%; C and C+ 50-65%; D 40-50%; F 0-40% (percentages reflect weighted scores including assignments and exams). NOTE: These letter grades are threshold scores only. Actual final scores needed to earn a certain letter grade may be lowered if warranted based on the difficulty of the exams. In other words, if your final total points in the course equal a 85%, you will not earn less than an A-; however, the threshold for an A- may be lower.

Student Accessibility Support Center Statement (SASC)

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: <https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html.

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.