

# MAT 319: Foundations of Analysis

Spring 2021

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 Blackboard for corrections or updates to the syllabus. Any changes will be clearly noted in course announcements or through Stony Brook email.

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**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](mailto:dimitrios.ntalampekos@stonybrook.edu). Office hours and Math Learning Center (MLC) hour:

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

The office and MLC hours will be held through the Zoom platform.

**Class Schedule:** Synchronous lecture delivery on Tuesday and Thursday at 11:30am-12:50pm through the Zoom platform. Lectures will be recorded in case of internet disruption. 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:**

- Mohamad Rabah. Email: [mohamad.rabah@stonybrook.edu](mailto:mohamad.rabah@stonybrook.edu). Office hours and Math Learning Center (MLC) hour: <http://www.math.stonybrook.edu/cards/rabahmohamad.html>
    - Face-to-face Recitation R01 on Monday and Wednesday at 2:40pm-3:35pm in Engineering 145.
  - Yevgeniya Zhukova. Email: [yevgeniya.zhukova@stonybrook.edu](mailto:yevgeniya.zhukova@stonybrook.edu). Office hours and Math Learning Center (MLC) hour: <https://www.math.stonybrook.edu/cards/zhukovayevgeniya.html>
    - Online synchronous Recitation R02 on Monday and Wednesday at 2:40pm-3:35pm through the Zoom platform. Lectures will be recorded in case of internet disruption.
  - Jacob Mazor. Email: [jacob.mazor@stonybrook.edu](mailto:jacob.mazor@stonybrook.edu). Office hours and Math Learning Center (MLC) hour: <https://www.math.stonybrook.edu/cards/mazorjacob.html>
    - Online synchronous Recitation R03 on Monday and Wednesday at 2:40pm-3:35pm through the Zoom platform. Lectures will be recorded in case of internet disruption.
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**Technical Requirements:**

- A device (such as computer, cell phone or tablet) that allows you to attend the lectures and office hours on the Zoom platform, and access the course material in Blackboard.
- A scanner or camera that allows you to scan your solutions to assignments and exams and upload them to Blackboard. For example, you can use a cell phone and a scan-app.
- A camera, required for proctoring the exams.
- A stable internet connection for attending classes and office hours, taking the exams and uploading solutions to Blackboard.

The university provides technology support. For laptop loans: <https://www.stonybrook.edu/commcms/studentaffairs/studentssupport/>; for IT support: <https://it.stonybrook.edu/services/itsm>.

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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.

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**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/~ebin/MAT320S2021>

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\\_spring2021/schedule\\_MAT319\\_spring2021.html](http://www.math.stonybrook.edu/~dimitriosnt/teaching/MAT319_spring2021/schedule_MAT319_spring2021.html)

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

**Homework:** Weekly problem sets will be assigned. 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.

- Assignments will be posted on Blackboard at the beginning of each week. You have the option to submit your written solutions to the teaching assistant of your recitation (if you are enrolled in a face-to-face recitation) or scan them and upload them to Blackboard (if you are enrolled in a face-to-face or online recitation).
- *Late homework will never be accepted*, but under documented extenuating circumstances the grade may be dropped.

**Exams:** There will be **two** Midterms as well as a Final, each respectively accounting for 20%, 20%, and 40% of the total grade. 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, March 2, during the time of the lecture, via Blackboard.

- **Midterm II** will be on Tuesday, April 6, during the time of the lecture, via Blackboard.
- The **Final** exam will be on Tuesday, May 18, at 11:15am-1:45pm, via Blackboard.

The two Midterms and the Final exam will be administered synchronously through Blackboard. You will have to write clearly, take a clear photo or scan of your work, and upload it to Blackboard. Note that credit cannot be given for manuscripts that are not legible and it is your responsibility to upload a readable copy of your work in time. In order to eliminate the impact of internet disruptions, sufficient extra time will be given for uploading your work to Blackboard. The exams will be proctored through Zoom by the instructor and the teaching assistants. Every student who is taking an exam will join the Zoom session of the class with camera enabled. Minor internet disruptions during proctoring are permissible.

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### **Student Absences Statement**

Students are expected to attend every class, report for examinations and submit major graded coursework as scheduled. If a student is unable to attend lecture(s), report for any exams or complete major graded coursework as scheduled due to extenuating circumstances, the student must contact the instructor as soon as possible. Students may be requested to provide documentation to support their absence and/or may be referred to the Student Support Team for assistance. Students will be provided reasonable accommodations for missed exams, assignments or projects due to significant illness, tragedy or other personal emergencies. In the instance of missed lectures the student is responsible for reviewing recorded lectures. Please note, all students must follow Stony Brook, local, state and Centers for Disease Control and Prevention (CDC) guidelines to reduce the risk of transmission of COVID. For questions or more information follow the link <https://www.stonybrook.edu/commcms/comingback/students.php>.

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### **Face Mask Policy**

Face coverings must be worn at all times while participating in the face-to-face components of this course. If a student does not comply, the student will be asked to leave the classroom. If the student does not comply or leave the classroom, the class will end and the student will be reported to the Office of Student Conduct and Community Standards at [communitystandards@stonybrook.edu](mailto:communitystandards@stonybrook.edu).

**Accommodations for Students with Hearing and Communication Impairments:** Some students with hearing and communication impairments may need their instructor to wear a clear mask for lip and facial expression purposes. If the student has registered with

the Student Accessibility Support Center (SASC) and has requested an accommodation for clear masks, SASC will reach out to the student's instructors and provide a clear mask for them to wear while teaching and/or interacting with the student. If you have questions, please email [sasc@stonybrook.edu](mailto:sasc@stonybrook.edu) or call (631) 632-6748.

**Face Mask Accommodations, Modifications, or Exemptions:** The Student Accessibility Support Center (SASC) works with students who may require academic accommodations. If a student is unable to wear a mask for health reasons, the student should contact SASC at [sasc@stonybrook.edu](mailto:sasc@stonybrook.edu). SASC will work with the student to help identify arrangements to complete in-person courses in an alternate format. If, however, there is an in-person class that cannot be accommodated in an alternate format, a student may be approved by the Medical Director of Student Health Services to wear a modified face mask or no face covering. In this situation, SASC will communicate this information to the faculty member. Approved students will also be provided with a written exemption from the Medical Director of Student Health Services that indicates any modifications or exceptions, which they must carry with them to show faculty if requested. Please note that medical exemptions are rare and are based solely on medical necessity. If a student is exempt from the face mask policy, proper social distancing will be ensured within a given instructional setting. If you have questions regarding accommodations, please email [sasc@stonybrook.edu](mailto:sasc@stonybrook.edu). For health related concerns in the classroom, please contact Dr. Rachel Bergeson, Medical Director, at [rachel.bergeson@stonybrook.edu](mailto:rachel.bergeson@stonybrook.edu).

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### **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, 128 ECC Building, (631) 632-6748, or at [sasc@Stonybrook.edu](mailto: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-people-physical-disabilities> and search Fire Safety and Evacuation and Disabilities.

### **Academic Integrity**

Representing another person's work as your own is always wrong. Faculty are 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](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 Judicial Affairs 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.