MAT 127: Calculus C
Stony Brook, Spring 2021

GENERAL INFORMATION: This course is the third semester in a three-semester sequence covering single-variable calculus. Now that you understand derivatives and integrals (which you learned in Calculus A and Calculus B), we can turn to two additional topics of single variable calculus essential to many areas of science, engineering, and mathematics: infinite series and elementary differential equations. This course fulfills the Master Quantitative Problem Solving (QPS) objective of the Stony Brook Curriculum; further details are below.

PREREQUISITES: In order to succeed in MAT127, you must have mastered derivatives and integrals and the techniques for calculating and applying them (e.g. MAT126 with a C or better, math placement level 8, or the equivalent).

TEXT, WEBSITE, AND BLACKBOARD: The textbook for the course is Open Stax Calculus, Volume 2, which is freely available as a web page, a PDF file, or e-book; printed copies can be purchased at the bookstore or online.

While the course will use blackboard to some extent, much of the material will be best found via the class web site. In particular, the week-by-week schedule and contact information for instructors (including office hours) can be found there; the schedule will be updated regularly as the course progresses, and office hours will update if they change.

HOMEWORK: You *can not* learn calculus without working problems. Expect to spend at least 8 hours a week solving problems; do all of the assigned problems, as well as additional ones to study. If you do not understand how to do something, get help from your TA, your lecturer, your classmates, the Math Learning Center, or the univeristy's Academic Success and Tutoring Center.

You are encouraged to study with and discuss problems with others from the class, but do your own homework by yourself, and make sure you *understand* how to do the problems.

Each week there will be problems to do on Lumen OHM as well as additional problems, short videos to watch (about 10-15 minutes each), discussion board questions, and a **quiz in the second lecture** of most weeks. Late homeworks will not be accepted, although two will be dropped. **Don't fall behind!**

COLLABORATION VS. CHEATING: Students are encouraged to work together and use resources outside the classroom appropriately. But turning in someone else's work (especially without attribution) —this includes using internet sites— is plagiarism and **will not be tolerated**. This will be reported immediately to the Academic Judiciary.

GRADING: Your course grade will be based on a combination of the following factors
- Weekly homework, including discussion board (10%)
- Participation (5%)
- Weekly quizzes during lecture (30%)
- Midterm (25%) — date TBA (mid March, during lecture)
- Final Exam (30%) — Wednesday Dec. 12, 11:15am-1:45pm.

Note that your grade in this course does not depend on how other students do. It is based completely on how well you master the material, as demonstrated in the above assessments.

COURSE DELIVERY: There are three different lectures for this MAT127, with different lecturers. However, all three lectures have the same homework assignments, will cover the same material during a given week, and while not identical, the quizzes and midterms will be comparable. Prof. Sutherland is the course coordinator for the class; you may contact him or your lecturer about general issues with MAT127.

All sections will take the same final exam on **Wednesday, May 12 at 11:15am**.

COMMUNICATION: It is **essential** that you read (and respond to) your Stony Brook email regularly. This is the major way that we can contact you individually, even though general announcements will be posted on blackboard and/or the class webpage. **You** are responsible for reading this email regularly; "I didn't see it" is not a valid excuse.

When sending email to one of the professors, please make sure you include your **full name** with **MAT127** in the subject line. This will help ensure that we are able to address your issue.

LEARNING OBJECTIVES: In this course, a succesful student will be able to

- Determine whether an infinite sequence converges or diverges, and compute the limit when appropriate.
- Using appropriate tests and methods, determine whether an infinite sum (series) converges or diverges, and in many cases calculate the sum.
- Represent various functions as power series (often as Taylor or MacLaurin series), and determine for which values of the variable the series converges. Manipulate power series by
- Using the Taylor remainder estimate, determine the accuracy of approximations given from a Taylor polynomial of a specific order, and conversely, given a desired accuracy and range of variable, determine the order needed to achieve it.
- Use series in a number of applications.
- Find both general and particular solutions of elementary differential equations of various types, including separable and first- and second-order linear equations.
- Understand differential equations and systems of equations and represent their solutions qualitatively, graphically, and numerically.
- Use differential equations to model various situations, including population models, mixing problems, Newton's law of cooling, etc.

In the course of doing the above, students will fulfill the following learning outcomes for "Master Quantitative Problem Solving":

1. Interpret and draw inferences from mathematical models such as formulas, graphs, tables, or schematics.
2. Represent mathematical information symbolically, visually, numerically, and verbally.
3. Employ quantitative methods such as algebra, geometry, calculus, or statistics to solve problems.
4. Estimate and check mathematical results for reasonableness.

STUDENT ABSENCES 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 the missed material. Students should use the textbook, recordings, website, and/or get notes from classmates, as appropriate. 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 see the university's coming back safe and strong site.

INFORMATION FOR STUDENTS WITH DISABILITES: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact the Student Accessibility Support Center, located at ECC (Educational Communications Center) Building, Room 128 (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Any arrangements with SASC should be made as early in the semester as possible.

ACADEMIC INTEGRITY: Each student must pursue his or her academic goals honestly and be held personally accountable for all submitted work. 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. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website.

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 University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Further information about most academic matters can be found in the Undergraduate Bulletin.

FACE MASK POLICY: Students should be aware that a face mask is required while in the classroom. 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, we will end the class and the students will be reported to the Office of Student Conduct and Community Standards at `communitystandards@stonybrook.edu`.

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`. SASC will work with the student to help identify arrangements to complete in-person courses in an alternate format, or make other appropriate modifications or exemptions.

COURSE EVALUATION: Each semester Stony Brook University asks students to provide feedback on their courses and instructors through an online course evaluation system. The course evaluation results are used by the individual faculty, department chairs and deans to help the faculty enhance their teaching skills and are used as part of the personnel decision for faculty promotion and tenure. No individually identifiable data are ever reported back to the university or instructor. Students who have completed previous evaluations can view all faculty ratings at `https://classie-evals.stonybrook.edu/`.

IT SUPPORT: For suggestions about online learning, visit the Keep Learning website at: `https://sites.google.com/stonybrook.edu/keeplearning/`. Report any technical issues at `https://it.stonybrook.edu/services/itsm` or call 631-632-2358.