

MAT 362 Syllabus, Spring 2020

Course description: This will be a mathematically rigorous course in the basics of differential geometry. In particular, we will introduce and study (with proofs) the fundamental concepts of differential geometry by focusing on the local and global properties of curves and surfaces. Major topics will include geodesics, parallel transport, curvature, isometries, the Gauss map, and the Gauss-Bonnet theorem.

Credits: 3

Class time and location: Tuesdays and Thursdays 2:30-3:50pm in Earth&Space 181.

Textbook: There is no required textbook, but each of the following can serve as a reference for what we will cover. There are also additional resources on the course webpage.

- T. Shifrin, *Differential Geometry: A First Course in Curves and Surfaces*, available [online](#).
- M. P. do Carmo, *Differential Geometry of Curves and Surfaces*.
- T. Banchoff and S. Lovett, *Differential Geometry of Curves and Surfaces*.

Course webpage: <https://sites.google.com/stonybrook.edu/ahanlon/mat-362>

Course Instructor: Andrew Hanlon

E-mail: andrew.hanlon@stonybrook.edu

Office: 304 Simons Center for Geometry and Physics

Office hours (in 304 SCGP): Fridays 2pm-4pm and by appointment

Math Learning Center hours (in Math Tower S-235): Thursdays 3-4pm

Grader: Jiaohao Hu

Office: Math Tower 5-125B

Office hours (in Math Tower 2-114): Mondays 9-10 am

Math Learning Center hours (in Math Tower S-235): Mondays 5-7 pm

Attendance: Attendance is strongly encouraged but not required. If you miss a class, you are still responsible for the material due, for learning all concepts covered, and turning in assignments. Class participation (asking and answering questions during class) is encouraged.

Blackboard: Some essential course information will be posted on Blackboard. You should have access to the course Blackboard. Assignment grades will be posted on Blackboard.

GRADING

Homework	30%
Midterm	30%
Final exam	40%

Homework: Homework will be assigned on a weekly basis and collected in class. Homework will be posted on the course webpage and on Blackboard. Each week, a collection of problems from the assignment will be selected by the instructors to be graded from the homework. It is in your best interest to complete all assigned problems since you will not know which problems will be graded in advance. Homework is considered due at the end of the class period on the due date. Any homework turned in after class will be considered late. No late homework will be accepted. If you cannot make it to class, then you must contact the instructor and/or grader to arrange for your homework to be turned in before the deadline.

Your lowest score for homework will be dropped. You may work with other students on the homework, but your solutions must be written in your own words. At this level of mathematics, clear and concise writing is critical. Your solutions will be judged for clarity of formulation in addition to having the correct idea.

Examinations: One 1 hour and 20 minute exams will be given during the semester in class and a 2 hour and 30 minute comprehensive final exam will be given during the final examination period. No books, notes, calculators, or other electronic devices may be used on the exams. You must bring your University ID card to all exams. Our exams are scheduled as follows.

Exam	Date	Time	Location
Midterm	March 10 (Tuesday)	2:30 pm – 3:50 pm	Earth&Space 181
Final Exam	May 14 (Thursday)	5:30 pm-8:00 pm	Earth&Space 181

Students should not make plans to leave before 9:00 pm on Thursday, May 14, 2020.

MAKEUP EXAMINATIONS: If a student has a valid documented reason, such as illness or a religious holiday, during examination times and informs the instructor, Andrew Hanlon, then the student is permitted to schedule a makeup examination with no penalty. The student must contact the instructor before the exam or be able to reasonably explain why contacting the instructor earlier was not possible. Students must be prepared to verify the reason for requesting the makeup by providing the proper document(s) upon request. Conflicts with other exams, personal business such as travel, employment, weddings, graduations, or attendance at public events such as concerts and sporting events are not valid excuses. Nor is forgetting the date, time or room of an examination a valid excuse. If a student misses an exam, does not have a valid documented excuse, and does not inform the instructor then the student will receive 0 points for the exam.

Questions, Problems, or Comments: If you have questions or concerns about the course, please consult the instructor, Andrew Hanlon.

Student Accessibility Support Center Statement: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, 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. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities>.

Academic integrity statement: 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 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. 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.