

TOPOLOGY AND GEOMETRY, MAT 364: FALL 2016

Topics and Text:

Our text for this course is *Topology of Surfaces* by L. Christine Kinsey.

The course will be divided into 3 parts. The first part of this course is an introduction to “point set topology”; as covered in chapters 2 and 3 of our text. This part of the course will be very “proof oriented”; that is you will be expected to know all the definitions and be able to understand and reproduce proofs given in the text, and be able to prove elementary statements on your own. In the second part of this course we will look at “cell complexes” and “surfaces” as discussed in chapter 4 of the text. This part of the course will be more “intuitive” and less proof oriented; the main results will be stated without proofs. In the third and last part of this course we will discuss “covering spaces” and the “fundamental group” of a topological space. This part of the course is not covered much in the text; we will develop the main results in a series of homework problems.

Your Teacher and grader:

Lowell Jones is teaching Lecture 01, which meets MWF 10:00am-10:53am in Physics 112; office is Math Tower 2-211; email at lejones@math.sunysb.edu; phone at 632-8248; office hours 11:30am-12:30pm on MWF.

El Mehdi Ainasse is the grader; office is Physics D-107; email at elmehdi.ainasse@stonybrook.edu; office hours in MLC are Monday 4pm-4:30pm, Wednesday 10am-11am, and Friday 12pm-12:30pm; office hours in office are Wednesday 4pm-5pm.

Homework

Homework is assigned for each week and should be handed in during the first lecture of the following week (unless otherwise stated in your homework assignment). Only your highest 10 Homework scores will count towards your final homework grade for this course. (See below for grading policy.)

All of the homework assignments will be posted under “Documents” on this website. For example HW 1 — which is due in class on Wednesday 9/7 — can be found by going to “Documents” and clicking on HW 1.

Exams There is one in-class midterm and a final exam, scheduled as follows:

Midterm: This will be an in class test on Friday October 28 .

Final exam: Tuesday December 20 from 2:15pm to 5:00 pm. The room assignment will be announced on our website later in the semester.

If you continue with this course it is with the understanding that you are able to take all of the exams at the scheduled times. If you miss an exam for reasons beyond your control, then discuss this as soon as possible with me – your lecturer. Scheduling problems – such as another exam scheduled at the same time as your Mat 211 exam – are not considered an acceptable reason for missing an exam.

Grading Policy

Homework=50%,

Midterm=25%,

Final exam=25%.

Disability Support Services (DSS) Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748. 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 Disability Support Services. 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 are required to report any suspected instance 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 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 Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

Certified Courses

To satisfy the Master Quantitative Problem Solving (MQPS) learning objective students must pass a MQPS certified course with a grade of C or better.

Learning outcomes for MQPS:

- (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.
- (5) Recognize the limits of mathematical and statistical methods.

A certified course must meet at least 4 of the above outcomes.

Mat 211 is certified as a STEM+ course. A C or better in this course fulfills the Science, Technology, Engineering, and Mathematics (STEM+) objective in the Stony Brook Curriculum.

Courses meeting the STEM+ requirement will typically have prerequisites from the MQPS, Study the Natural World (SNW), or Understand Technology (TECH) areas. Such courses will require students to cover material in the STEM+ area at a deeper level than the introductory Versatility courses.

Course Schedule

week of 8/29-9/2: sections 2.1-2.2

week of 9/5-9/9: section 2.3. No class on Monday

week of 9/12-9/16: sections 2.4-2.5.

week of 9/19-9/23: section 2.6.

week of 9/26-9/30: section 3.1.

week of 10/3-10/7: sections 3.2-3.3.

week of 10/10-10/14: section 3.4.

week of 10/17-10/21: section 3.5.

week of 10/24-10/28: Midterm in class on Friday 10/28; also cover sections 4.1-4.2.

week of 10/31-11/4: sections 4.3 and 4.5 (classification of surfaces, no proofs); euler characteristic (no proofs).

week of 11/7-11/11: In the rest of this semester we will discuss *covering spaces* and the fundamental group of a topological space (see sections 9.1-9.2 for definitions).

week of 11/14-11/18:

week of 11/21-11/25: no class 10/23-10/25.

week of 11/28-12/2: section 7.3. No classes Wed-Fri.

week of 12/5-12/9: last week of classes; catchup and review.