

MAT 401 SEMINAR IN MATHEMATICS
DESSINS D'ENFANTS, RIEMANN SURFACES, AND ALGEBRAIC CURVES

FALL 2019

Instructor: Lisa Berger
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Current Office Hours:

Tuesdays: 10:00-11:00 in room P-143, 11:00-12:00 in 4-100A
Thursdays: 11:30-12:30 in 4-100A

Office hours may be adjusted to accommodate the instructor's schedule and/or student needs. Students unable to meet during scheduled office hours are encouraged to schedule an appointment with the instructor.

Semester Schedule. We will not meet in class on Tuesday, October 1, or on Tuesday, October 22. We will arrange to re-schedule these classes at mutually convenient times.

General Information. The goal of this course is to learn some open questions about dessins d'enfants, which are certain graphs on Riemann surfaces, and the action of the absolute Galois group of the field of rational numbers on dessins. As part of the course, we will learn relationships among dessins, algebraic curves, and Riemann surfaces, and the work will involve an appealing mix of complex analysis, algebra, and topology. Those students who have a strong background in these areas will learn how different fields of mathematics interact to define and study a particular problem. Other students will get an introduction to the areas they have not yet seen, along with motivation for further study.

We will begin by following the main required book for this course:

Girondo, Ernesto and González-Diez, Gabino *Introduction to compact Riemann surfaces and dessins d'enfants*. London Mathematical Society Student Texts, 79. Cambridge University Press, Cambridge, 2012.

This text draws on various areas of mathematics, so some outside reading should be expected. Other papers and articles may be recommended or required, depending on students' interest and backgrounds.

This course satisfies the Stony Brook Curriculum SPK requirement, which can be found at the link below:

https://www.stonybrook.edu/sb/bulletin/current/policiesandregulations/degree_requirements/SPK.php

Presentations. This is a seminar course, and each student will take several turns at learning and presenting (teaching) material to the class. Presentation topics and dates will be assigned by the instructor, in consultation with students; we will attempt to divide material according to individual student interest and expertise.

Guidelines for presentations will be discussed in class, but you are encouraged to develop your own presentation style. Students are expected to improve in design and clarity as the semester progresses, with regular, thoughtful feedback from the instructor.

All students are expected to participate in the course; course participation includes thoughtful interaction and participation during all classes, whether led by the course instructor or by a student.

Homework/Class Work/Quizzes. Solving problems, both in-class and on your own, is an essential component of the course. Homework will be assigned and collected regularly, and selected problems will be graded. Late homework will not be accepted. Announced and/or unannounced quizzes may be given, and there may be assignments completed and collected during class. Students are expected to be present for class, and missed quizzes and classwork may not be completed for credit. The lowest score in the homework/classwork/quiz category will be dropped.

Final Grades. Final grades will be based on presentations, contributions to the class discussion and problem solving, and on written problem solutions.

- (1) Presentations: 60%
- (2) Homework/Classwork: 40%

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

If you have any questions about the academic integrity expectations, please ask.

Student Accessibility Support Center: 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 Disability Support Services. For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities>]

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.