

MAST 699 (MAST 833), Sec. A
Topics in Algebra
Fall 2020

Note: All lectures and office hours will be held online.

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Office Hours: By Zoom appointment, email one of the instructors for an appointment.

Class Schedule: Tuesdays-Wednesdays, 9:30-11:00 AM via Zoom; link will be available on Moodle. The lecture will be recorded and available on Moodle. The first lecture will be on Sept. 11; the last lecture on Dec. 4.

Textbook: No textbook.

Final Grade: Assignments 80% (Will be available on Moodle).
Final Zoom Presentation 20%.

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Topics: **Part 1:** We will discuss the p -adic representations of the absolute Galois group of a finite extension of \mathbb{Q}_l , where l is a prime integer different from p . We will define Weil-Deligne representations, the

notion of monodromy modules and we will see the geometric situations in which they appear.

Part 2: In the second part, we will study p -adic representation of p -adic local fields. We will start with Tate's theorem on the cohomology of C_p , and then introduce various p -adic period rings that will allow us to understand the geometry behind each Galois representation. Several explicit examples (Tate's curves, Hodge–Tate decomposition of elliptic curves) will be provided.

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [*Undergraduate Calendar, Sec 17.10.2*]

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