

Algebra and Number Theory 2

Lectures: 8-9:35 am on Wednesdays; 1:30-3:05 pm on Fridays at 6B204 in No. 6 Teaching Building

Instructor: Koji Shimizu (shimizu@tsinghua.edu.cn, Shuangqing Complex Building B621)

TA: Wenhan Dai (dwh23@mails.tsinghua.edu.cn)

Course Description: The course is a continuation of Algebra and Number Theory 1, and it covers Class Field Theory. It plays a fundamental role in many branches of modern Number Theory, and thus it is one of the standard topics for Ph.D. students in the field. The course teaches the statements and proofs of Local and Global Class Field Theories. Along the way, we also discuss group cohomology and other related topics. Students will learn the course materials by attending lectures by the instructor and doing homework on a regular basis.

Prerequisites: Algebra and Number Theory 1

Office Hours: 2-3 pm on Thursdays in Shuangqing Complex Building B621 (tentative)

TA's Office Hours: TBA

Homework: Homework consists of weekly reading assignments and two problem sets. The first problem set is due on October 31 and the second is due on December 5. The problems will be posted online two weeks before the deadline. No late submission will be accepted.

Final Exam: The final exam is cumulative and closed-book.

Grading: First Problem Set 20%, Second Problem Set 20%, Final Exam 60%

Attendance: You are expected to come prepared and actively participate in every lecture.

Miscellaneous: The instructor will comply with the Ten Guidelines of Professional Conduct for College Teachers in the New Era and the Constitution of Tsinghua University.

References

- [AT09] Emil Artin and John Tate, *Class field theory*, AMS Chelsea Publishing, Providence, RI, 2009, Reprinted with corrections from the 1967 original.
- [CF10] J. W. S. Cassels and A. Fröhlich (eds.), *Algebraic number theory*, London Mathematical Society, London, 2010, Papers from the conference held at the University of Sussex, Brighton, September 1–17, 1965, Including a list of errata.
- [Mil20] J. S. Milne, *Class Field Theory*, 2020, Available at <https://www.jmilne.org/math/CourseNotes/cft.html>.
- [Ser79] Jean-Pierre Serre, *Local fields*, Graduate Texts in Mathematics, vol. 67, Springer-Verlag, New York-Berlin, 1979, Translated from the French by Marvin Jay Greenberg.