



J.-P. Serre



J. Tate

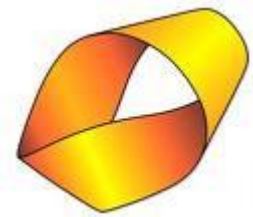
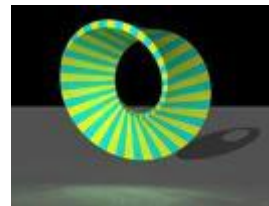
WESTERN UNIVERSITY  
LONDON CANADA  
DEPARTMENT OF MATHEMATICS

**Class Field Theory - Mathematics 9414a**

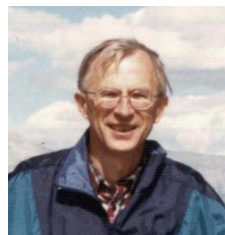
Fall 2012

**Instructor:** Ján Mináč  
**E-mail:** [minac@uwo.ca](mailto:minac@uwo.ca) and [jminac1811@gmail.com](mailto:jminac1811@gmail.com)  
**Office:** Middlesex College, room 131 (I also use the university campus as a large, outdoor office).  
**Office Telephone:** 519 661-2111, extension 86519.  
**Office Hours:** Will be discussed in class.  
**Class Times and Location:** To be decided in Department of Mathematics meeting  
**Prerequisites:** Good knowledge of undergraduate algebra.  
**Evaluation:** Will be discussed in class.

**Text:** *Number Theory 2: Introduction to Class Field Theory*, by Kazuya Kato, Nobushige Kurokawa and Takeshi Saito. Iwanami Series in Modern Mathematics, American Mathematical Society, Translations of Mathematical Monographs, Volume 240, 2011. ISBN: 978-0-8218-1355-3.



E. Artin



J. Labute



A. Schmidt



K. Wingberg



J. Neukirch

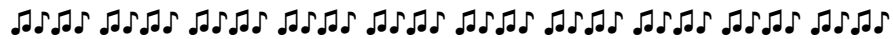
**Course Outline:**

Class field theory is a stunning victory of the human mind. It is the culmination of several generations of effort to find higher reciprocity laws and therefore to understand abelian extensions of algebraic number fields. It is the end of a great period in modern number theory initiated by P. Fermat, L. Euler, J. Lagrange and C.-F. Gauss; and completed roughly by C. Chevalley, E. Artin and J. Tate. Yet it is also a new beginning of non-abelian class field theory,

the Langlands program, Andrew Wiles, Richard Taylor and Ken Ribet's solution of Fermat's Last Theorem and the beginning of new dreams and hopes of a deep understanding of the mysterious relations between automorphic representations and Galois representations linked via L-functions. Concrete and abstract, deep and obvious, romantic, revolutionary and traditional – it all comes together in a magic vortex which may cause your head to spin with the wonder and excitement of it all.

The goal of my lectures is to introduce class field theory through historically important mathematical problems such as reciprocity laws and Golod-Shafarevich's negative solution of Hilbert's class field tower, and to try and preserve its magic, charm and mystery. I hope that after this course you will lose the capability to think about anything else but class field theory.

☺!



**Scholastic offences:** Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_grad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_grad.pdf)