

PMAT 603 – 01 Conference course in pure math (Abelian Varieties)

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Meeting times: TBA

Grading: 100% paper and presentation

References: J. Milne, *Abelian Varieties*, available at www.jmilne.org/math (main reference)

D. Mumford, *Abelian Varieties*, Oxford University Press, 1970.

Syllabus:

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- preliminaries on Riemann surfaces and algebraic curves
- analytic uniformization of elliptic curves
- lattices and complex tori
- the period lattice and of an algebraic curve
- theta functions
- line bundles, Hermitian forms with positive-definite imaginary part, and algebraicity of complex tori
- algebraic construction of the Jacobian variety
- Rosati involution, isogenies, dual abelian variety, polarizations, endomorphism rings
- ℓ -adic representations and zeta functions
- moduli spaces of abelian varieties