Background and prerequisites
Henri Darmon and Eyal Goren

The goal of this 10-hour minicourse will be to cover some of the foundational material and prerequisites that might be assumed but not adequately covered in the other, more specialised mini-courses. The precise syllabus will be determined after close consultation with the other speakers, but we expect that some of the topics will include:

1. Hecke theory for **GL**(2) and other groups.
2. Dimension formulas.
3. Theta functions.
4. Modular forms of weight 1.
5. Introduction to the Eichler trace formula.
6. The Birch and Swinnerton-Dyer conjecture, from a computational point of view.
7. Mod p and p-adic modular forms.
8. Hilbert modular forms.
9. Cycles on Shimura varieties.