

**18.787: AN INTRODUCTION TO THE ARTHUR-SELBERG  
TRACE FORMULA**

**Lecture:** Tuesdays and Thursdays 1:00pm-2:30pm in 8-119

**Lecturer:** David Whitehouse

**Office:** 2-304

**E-mail:** [dw@math.mit.edu](mailto:dw@math.mit.edu)

**Course website:** <http://math.mit.edu/~dw/18.787/>

**Office hours:** By appointment

**Prerequisites:** Algebraic number theory. Representation theory. Familiarity with the basics of automorphic representation theory, such as the material contained in Chapter 3 of Bump's book, "Automorphic forms and representations".

**Course description:** The aim of the course is to give an introduction to the Arthur-Selberg trace formula and its applications to the study of automorphic forms. In particular we hope to discuss the use of the trace formula in the proof of Weyl's law, the work of Jacquet and Langlands on the correspondence between automorphic representations on quaternion algebras and  $GL(2)$ , and the work of Labesse and Langlands on endoscopy for  $SL(2)$ . If time permits we will also discuss the stabilization of the trace formula and the relative trace formula.

**Textbook:** There will be no textbook for this course, relevant references with on-line links can be found on the course website.

**Grading:** There will be no regular homework or exams. Students taking the class for credit will be expected to complete a project based on the class, the topic is to be chosen in consultation with the lecturer.