MA773 Instructor: Russell Brown
Topics in analysis Spring 2001
Prerequisite: MA571

- The Fourier transform as an operator on L^2, L^1 and tempered distributions
- Interpolation
- Fractional integration and Sobolev inequalities
- Singular integrals on L^p
- Littlewood Paley theory
- Oscillatory integrals
- Asymptotics of Bessel functions
- Restriction theorems for the sphere
- Uniform Sobolev inequalities
- Inverse problems–the theorem of Sylvester and Uhlmann

The material will be taken from the books by Stein: *Singular integrals,* and *Harmonic analysis,* and Stein and Weiss *Introduction to Fourier analysis on Euclidean Spaces.* The last two topics are covered in the articles:

- Kenig, C. E.; Ruiz, A.; Sogge, C. D. Uniform Sobolev inequalities and unique continuation for second order constant coefficient differential operators. Duke Math. J. 55 (1987), no. 2, 329–347.
- Sylvester, John; Uhlmann, Gunther A global uniqueness theorem for an inverse boundary value problem. Ann. of Math. (2) 125 (1987), no. 1, 153–169.

I do not plan to use a text, but will prepare lecture notes.

January 5, 2001