

# Math 7376 Topics in Differential Geometry: Analysis and Metric Invariants, Spring 2016

**Instructor:** Chris Kottke

**Office:** #455 Lake Hall

**Email:** c.kottke@neu.edu

**Course website:** <http://www.northeastern.edu/ckottke/7376/>

**Office hours:** TBD

**Description:**

This course will cover a series of topics related to computing metric and spectral invariants of manifolds. Topics may include (but are not limited to)

- Elliptic complexes/Hodge theory
- Pseudodifferential operators on manifolds
- Heat kernels, spectral theory and determinants
- Index theory
- $L^2$  cohomology of some non-compact manifolds
- Scattering theory

There is no required text for the course; rather lecture notes will be developed and made available.

By the end of the course, students will research a related topic in detail and write an expository paper on the subject.

**Grade:** The grade for the course will be based on the expository paper at the end of the term.

**Course Policies:**

The policies and procedures outlined in

<http://www.northeastern.edu/cos/wp-content/uploads/2014/11/Northeastern-COS-Policies-Template.pdf> apply.

If you have a concern about the course or the instructor that is not or cannot be resolved by speaking with the instructor, please contact Professor Maxim Braverman, 467LA, x8769.