MATH 420/507: Real Analysis I/ Measure Theory and Integration, 2018W1

Time and place: MWF 9:00-9:50, ORCH 3074

Instructor: Stephen Gustafson, gustaf@math.ubc.ca; **Office**: Math 115.

Web page: http://www.math.ubc.ca/∼gustaf/M420

Text: G. Folland, *Real Analysis:Modern Techniques and Their Applications*, 2nd. ed.

General description: this cross-listed first-year graduate/fourth-year undergraduate course covers measure theory and integration, core material which, together with the functional analysis covered in Math 421/517, provides the foundation for much of mathematical analysis. It is used in many areas of pure and applied mathematics, including harmonic analysis, differential equations, probability theory, information theory, differential geometry, numerical analysis and mathematical physics.

Topics: roughly the first 3 chapters of Folland. In brief,

- sigma algebras, outer measures, measures; Lebesgue measure

- measurable functions, integration; Lebesgue integral

- convergence of functions, convergence theorems

- Radon-Nikodym theorem

- introduction to L^p spaces

Pre-requisites: a score of 68% or higher in UBC MATH 321 or equivalent.

Grading: homework assignments: 50 %,   final exam: 50 %

You may find it useful to discuss and work on homework problems with other students, but you must write the solutions on your own.

Version of Aug. 27, 2018 – please check course webpage for updates.