Mathematics 425/525, Term I, 2017

Instructor: JINGYI CHEN

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Topics: Manifolds, smooth structures, tangent and cotangent spaces, vector fields, immersion and embedding, submanifolds, Sard theorem, Frobenius theorem, tensors and differential forms, vector bundles, orientation of manifolds, integration on manifolds, and if we have time, we will give a brief introduction to Lie groups.

Prerequisites: Undergraduate training in analysis (for example Math 320) and linear algebra.

Text: Introduction to Smooth Manifolds, John M. Lee, Springer edition, 2nd Ed. (Note: The entire e-book can be viewed online via the UBC Library website.)

Reference:

(1) Foundations of Differentiable manifolds and Lie groups, by F.W. Warner, Springer edition
(2) Lectures on Differential Geometry, by S.S. Chern, World Scientific
(3) A Comprehensive Introduction to Differential Geometry, Vol. 1, 3rd Edition, by M. Spivak

Evaluation: The course mark will be based on bi-weekly homework assignments.