

**SMI “DIFFERENTIAL GEOMETRY” 2025  
COURSE PROGRAM  
Renato Ghini Bettiol**

Main (primary) textbook:

Introduction to Smooth Manifolds, by John M. Lee. Springer GTM. Second edition (2012)

Secondary textbook:

A Comprehensive Introduction to Differential Geometry (Volume 1), by Michael Spivak. Publish or Perish. Third edition (1999)

Prerequisites:

Necessary: Undergraduate Linear Algebra, Real Analysis, and Multivariable Calculus

Desirable: Basic point set topology

Suggested preliminary reading:

Appendices A, B, C, D of the main textbook, which review the prerequisites above.

Syllabus:

This course is an introduction to differential geometry at the graduate level, that will begin with the definition of a smooth manifold. During the first and second parts of the course, we aim to cover most of the material in Chapters 1-5 and 8-13 of the main textbook, respectively.

Additional topics from Riemannian geometry or based on students' interests may be discussed in the last week of the course, depending on time availability.