Please choose a different book from the one you read during winter quarter. See the Math 545 list for additional comments about [1]–[9].


[2] F. Warner, *Foundations of Differentiable Manifolds and Lie Groups*, Springer–Verlag, 1983. The last part of Chapter 1 and most of Chapters 2–4 will be covered in Math 546. If you decide to study the proof of the de Rham theorem (Chapter 16 in [ISM]) on your own, Warner’s Chapter 5 gives a very different proof, based on the theory of sheaves.


[4] S. Sternberg, *Lectures on Differential Geometry*, Prentice–Hall, 1964. As some of you found out last quarter, this book covers a lot of ground, but is very challenging to read. The Math 546 material is mostly found in Section II.8 and Chapters III and V.


[10] S. Kobayashi and K. Nomizu, *Foundations of Differential Geometry*, Volumes 1 and 2, Wiley, 1963 & 1969. A standard reference work for researchers in the field, which I like to think of as the “Encyclopaedia Brittanica” of differential geometry. Not very useful for learning the material for the first time, but once you’ve been exposed to the concepts this is a very concise and complete summary of basic differential geometry, including a great deal of information on complex manifolds, Riemannian manifolds, and bundle theory. You’ll probably want this on your shelf if you decide to do research in differential geometry or any related area. Much of the subject matter of Math 545 and 546 is covered (very tersely) in Chapter I of Volume I.


[13] R. Bott and L. W. Tu, *Differential Forms in Algebraic Topology*, Springer-Verlag, 1982. This book goes much deeper into de Rham cohomology than we will have time for. If you’re interested in algebraic topology, this will give an excellent perspective on the ways that smooth manifold theory are applied there.