

Background on differential forms

There are several books which give leisurely, detailed and motivated introductions to differential forms. Here are a few specific references that seem to have been relatively well – received:

D. Bachman, *A Geometric Approach to Differential Forms* (2nd Ed.), Birkhäuser, 2012.

H. M. Edwards, *Advanced Calculus: A Differential Forms Approach*, Birkhäuser, 1994.

J. Hubbard and B. B. Hubbard, *Vector Calculus, Linear Algebra, and Differential Forms: A Unified Approach* (4th Ed.), Matrix Editions, 2009.

I. H. Madsen and J. Tornehave, *From Calculus to Cohomology: De Rham Cohomology and Characteristic Classes*, Cambridge University Press, 1997.

S. H. Weintraub, *Differential Forms: Integration on Manifolds and Stokes' Theorem* (1st Ed.), Academic Press, 1996.

And here are some online references that might be useful:

<http://www.math.purdue.edu/~dvh/preprints/diffforms.pdf>

<http://www.math.ucla.edu/~tao/preprints/forms.pdf>

<http://www.math.cornell.edu/~sjamaar/papers/manifold.pdf> (somewhat more advanced)

<http://math.colorado.edu/~jnc/lecture1.pdf> (more advanced at the end)

<http://www.math.sjsu.edu/~simic/Fall10/Whatis/diff-forms.pdf>

<http://www.math.ucsd.edu/~lindblad/150b/DifferentialForms.pdf> (early draft of Bachman)