GEO 384F: Finite Element Method in Geophysics: References

Textbook: Becker, G.F. Carey, and J.T. Oden, *Finite Elements: An Introduction*, Volume 1 of the Texas Finite Element Series, Prentice Hall, 1981. Note: This book is out of print, but you can purchase it for $50 (cash or check) from Sue Rodriguez (suerod@ices.utexas.edu; ACE 4.236).

Other books of interest:

- **The Finite Element Method:**

1. O. Axelsson and V.A. Baker, *Finite Element Solution of Boundary Value Problems: Theory and Computation*, reprinted in SIAM Classics in Applied Mathematics series (2001).
2. E.B. Becker, G.F. Carey, and J.T. Oden, *Finite Elements* (6 volumes: *An Introduction*, *A Second Course*, *Computational Aspects*, *Mathematical Aspects*, *Special Problems in Solid Mechanics*, *Fluid Mechanics*) (1981).
3. D. Braess, *Finite Elements. Theory, Fast Solvers, and Applications in Solid Mechanics*, Cambridge (2007)
4. S.C. Brenner and L.R. Scott, *The Mathematical Theory of Finite Element Methods*, volume 15 of Texts in Applied Mathematics, third edition, Springer (2008)
5. P.G. Ciarlet, *The Finite Element Method for Elliptic Problems*, volume 40 of Classics in Applied Mathematics, SIAM (2002)
6. M.S. Gockenbach, *Partial Differential Equations: Analytical and Numerical Methods*, SIAM (2002)
7. M.S. Gockenbach, *Understanding and Implementing the Finite Element Method*, SIAM (2006)
8. T.J.R. Hughes, *The Finite Element Method: Linear, Static and Dynamic Finite Element Analysis*, Dover (2000)
9. C. Johnson, *Numerical Solution of Partial Differential Equations by the Finite Element Method*, Dover (2009, republication of 1987 book).
10. J.T. Oden and J.N. Reddy, *An Introduction to the Mathematical Theory of Finite Elements*, Dover (republication of the 1976 book).
11. J.C. Simo and T.J.R. Hughes, *Computational Inelasticity*, Springer-Verlag, New York (1998).
12. G. Strang and G.J. Fix, *An Analysis of the Finite Element Method*, Wellesley Cambridge Press (1973).
13. O.C. Zienkiewicz and R. Taylor, *The Finite Element Method*, three volume set: *Vol. 1, Its Basis and Fundamentals*; *Vol. 2, Solid and Structural Mechanics*; *Vol. 3, Fluid Dynamics*, Butterworth-Heinemann (2005).

- **Mathematical background on PDEs:**

1. L. C. Evans, *Partial Differential Equations*, AMS (2010)
2. R. Haberman, *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems*, Fourth Edition, Pearson (2004)
3. M. Renardy and R. C. Rogers, *An Introduction to Partial Differential Equations*, volume 13 of Texts in Applied Mathematics, Springer (1996)

- **Computational/Software Packages and Programming Languages:**

1. A. Logg, K. Mardal, G. N. Wells, *Automated Solution of Differential Equations by the Finite Element Method*, Springer (2012)
2. The FEniCS Manual (a 200-page excerpt from the FEniCS Book), https://launchpadlibrarian.net/84116499/fenics-manual-2011-10-31.pdf
3. H. P. Langtangen, *FEniCS tutorial (Python)*, http://fenicsproject.org/documentation/tutorial
4. D. J. Higham and N. J. Higham, *Matlab Guide, second edition*, SIAM (2005). Note: Check out http://www.ma.man.ac.uk/~higham/mg for updates, code, and errata.
5. M. Lutz, *Learning Python. O'Reilly*, third edition (2007)
6. The Python Tutorial, http://docs.python.org/2/tutorial/
7. Kenneth Moreland. The ParaView Tutorial, Version 3.12. Technical Report SAND 2011-8896P, Sandia National Laboratories, 2011 http://www.paraview.org/Wiki/images/d/d5/ParaViewTutorial398.pdf