MAP 6376 Finite Element Method (S22) | Sara Pollock

University of Florida

Sara Pollock
Department of Mathematics

College *of* Liberal Arts *and* Sciences

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Numerical Analysis Research Group

Seminar on Applied and Numerical Analysis (ANA)

Department of Mathematics

AWM@UF

Links

MAP 6376 Finite Element Method (S22)

Time and Location
M W F Period 6 (12:50-1:40pm), Little Hall Room 368

Syllabus <- (that's a link, click on it!)

Homework/Projects: Posted on **Canvas**.

Useful References:

Getting started with Python and FEniCS:

- FEniCS download page
- FEniCS documentation and tutorials
- SciPy.org
- The FEniCS library has been around for a while now. Many questions can be answered by searching the web for the arcane error the compiler keeps giving you.
- Author's webpage for textbook, Introduction to Automated Modeling with FEniCS. It includes his lecture notes in slide form.

Numerical Partial Differential Equations and Finite Elements

- Finite Elements: Theory, Fast Solvers, and Applications in Solid Mechanics, D. Braess
- Introduction to Automated Modeling with FEniCS, L. R. Scott
- Numerical Approximation of Partial Differential Equations, A. Quarteroni and A. Valli
- Partial Differential Equations with Numerical Methods, S. Larsson and V. Thomée
- The Finite Element Method for Elliptic Problems, P. G. Ciarlet

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- The Mathematical Theory of Finite Elements, S. Brenner and L. R. Scott

- The Finite Element Method: Theory, Implementation and Applications, M. G. Larson and F. Bengzon

- Finite Element Solution of Boundary Value Problems: Theory and Computation: O. Axelsson and V. A. Barker

Numerical Analysis and Scientific Computation:

- Numerical Analysis, Walter Gautschi.

- Numerical Mathematics. A. Quarteroni, R. Sacco and F. Saleri.

- Numerical Analysis. D. Kincaid and W. Cheney.

- Introduction to Scientific Computing and Data Analysis. M. Holmes.

Linear Algebra:

- Linear Algebra and its Applications. G. Strang

Numerical Linear Algebra:

- Accuracy and Stability of Numerical Algorithms. N. Higham.

- Matrix Analysis. R. Horn and C. Johnson.

- Matrix Computations. G. Golub and C. Van Loan.

- Iterative Methods for Linear and Nonlinear Equations. C. T. Kelley.

Partial Differential Equations:

- Elliptic Partial Differential Equations of Second Order, D. Gilbarg and N. S. Trudinger.

- Partial Differential Equations, L. C. Evans.

Useful Links:
- UF class meeting times
- UF 2021-2022 Academic Calendar
- UF Spring 2022 Dates and Deadlines
- Numerical Analysis Dept. Exam Resources (GMA archive)
- Midterms and Finals from my MAD 6406 and 6407 classes

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