Richard D Myers, Ph.D.

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rdm375

Courses Taught

Calculus I, MATH 1431, University of St. Thomas: Summer 2006

Calculus II, MATH 1432, University of St. Thomas: Fall 2005, Spring 2006, Fall 2006

Calculus III, MATH 2431, University of St. Thomas: Spring 2007

Differential Equations, MATH 2343, University of St. Thomas: Fall 2005, Fall 2006

Intro to Technical Computing, MATH 2338, University of St. Thomas: Spring 2007

Numerical Analysis, MATH 3339, University of St. Thomas: Fall 2005, Spring 2007

Linear Algebra, MATH 3334, University of St. Thomas: Spring 2006

Probability, MATH 3335, University of St. Thomas: Fall 2006

Real Analysis, MATH 4331, University of St. Thomas: Fall 2006

Junior Research Seminar, MATH 3181, University of St. Thomas: Fall 2005, Spring 2006, Fall 2006

Senior Research Seminar, MATH 4181, University of St. Thomas: Spring 2006, Fall 2006

Independent Study, MATH 4392, University of St. Thomas: Spring 2006, Summer 2006, Fall 2006

Courses Developed

Junior/Senior Research Seminar, MATH 3181/4181, University of St. Thomas

Introduction to Technical Computing, MATH 2338, University of St. Thomas

Undergraduate Research Supervision

Michael Deeb - *The Mathematics Behind Basketball*, Fall 2006

Ashley Gibbs - *Mathematics of Stringed Instruments*, Fall 2006

David Gutierrez - *The Use of Mathematics in Predicting Human Strength Performance*, Fall 2006

Kulvir Kaur - *The Techniques of Teaching Mathematics in Grades 8-12*, Fall 2006

Hai Le - *The Mathematics of Digital Photography*, Fall 2006

Michael Nguyen - *P vs. NP*, Fall 2006

Claudia Oramas - *Stabilization of Structures*, Fall 2006

Linh Tran - *Mathematics and Pool*, Fall 2006

Mary Tapado - *The Golden Mean*, Fall 2006

Giselle Ramos-Bryan - *Pascal's Triangle*, Spring 2006

Moses Khan - *The Relevance of Mathematics in Our Daily Lives*, Spring 2006

Ashley Gibbs - *Bezier Curves*, Spring 2006

Michael Nguyen - *Cryptology: The Study of Cryptography and Cryptanalysis*, Spring 2006

Janie Garcia - *Tomography: A mathematical Background for Medicine's Image Machine*, Spring 2006

Randhi Panapitiya - *Mathematical Relationships with Traffic Flow*, Spring 2006

Robin Stone - *Chaos, Fractals, and Perlin Noise in the Generation of Virtual Landscapes*, Spring 2006

Mary Tapado - *Wallpaper Patterns*, Spring 2006

Janie Garcia - *Galileo Galilei: His Life, His Work*, Fall 2005

Moses Khan - *The Life and Philosophy of Pythagoras*, Fall 2005

Dominic Novak - *Algorithmic Composition: How can math be used in the composition of music?*, Fall 2005

Giselle Ramos-Bryan - *Math in Art: Prospective Geometry*, Fall 2005

Robin Stone - *Unlocking Young Minds: Methods of Teaching Mathematics*, Fall 2005

The University of St. Thomas Research Symposium (Sponsored Students)

Ashley Gibbs - *Bezier Curves in Application*, Spring 2006

Christopher LaVallee - *The Use of Mathematics in the Design of a Long-Bow*, Spring 2006

Academic Appointments

Sept 2005 – Aug 2007 **Visiting Assistant Professor of Mathematics**, University of St Thomas – Houston, TX

- Taught undergraduate courses across calculus, linear algebra, probability, differential equations, and numerical analysis.
- Supervised undergraduate research and developed new curriculum offerings.
- Served on departmental curriculum revision committee.
- Served as department library liaison.
- Developed a computer science minor for the Mathematics Department.

Professional Service

Curriculum development and revision, University of St. Thomas

Departmental computing facilities director, Mathematics Dept, University of St. Thomas

Research Interests

Numerical analysis for PDEs and ODEs

Time integration methods and stability theory

Adjoint methods and optimal control

Scientific computing and high-performance simulation

Computational fluid dynamics and pipeline flow modeling

Research Experience

Sept 2007 – Mar 2025 **Software Development Scientist**, DNV

- Led **research, development, validation, and production deployment** of advanced numerical algorithms for real-time and offline pipeline simulation platforms, including **Synergi Gas**, **Stoner Pipeline Simulator (SPS)**, **Attune**, **GTO**, and **TSM**.
- Conducted **long-horizon applied research in numerical methods for transient pipeline flow**, developing, analyzing, and validating time-integration schemes with **provable stability and accuracy properties**.
- Served as a technical authority for **transient hydraulic and thermal simulation**, spanning **PDE formulation**, **spatial discretization**, **nonlinear solvers**, **stability analysis**, and **runtime robustness** under SCADA-driven operational conditions.
- Bridged **theoretical numerical analysis** and **large-scale production simulation code**, reverse-engineering and modernizing legacy **FORTRAN** and **C++** codebases while preserving **numerical fidelity**, **performance**, and **backward compatibility**.
- Drove **cross-team technical enablement and knowledge transfer** through **internal seminars**, **developer training**, **technical documentation**, and direct collaboration with **research**, **product**, and **customer-facing engineering teams**.
- Proven record of long-horizon technical ownership and sustained innovation

Publications

May 2019 *Step Doubling for Pipeline Flow*

This paper defines and studies a simple, efficient method for discretizing pipeline equations in time.
Todd F Dupont, Richard D Myers
onepetro.org/PSIGAM/proceedings-abstract/PSIG19/PSIG19/PSIG-1923/2121 (Paper presented at the PSIG Annual Meeting, London, UK, May 2019)

Education

Sept 2003 – Aug 2005 **University of Houston–University Park**, PhD in Mathematics – Houston, TX

- Dissertation: *Numerically Consistent Approximations for Optimal Control Problems Applied to Stiff Chemical Systems*
- Abstract: In the context of optimal control problems of state-finding and time-based controls, adjoint discretizations for Runge-Kutta methods were developed that converge at the same rate as the solution and objective function.
- Advisor: Prof. Jiwen He
- github.com/rdm375/RichardMyers-Dissertation/

Sept 2000 – May 2002 **University of Houston–University Park**, MS in Applied Mathematics – Houston, TX
Focused on Numerical Analysis and Scientific Computing: Numerical ODEs, PDEs, Linear Algebra, Optimization, and Parallel Programming.

Sept 1995 – May 2000 **University of Houston–University Park**, BS in Mathematics – Houston, TX

- Graduated Magna Cum Laude

Technical Skills

Platforms: Linux, Windows, WSL

Languages: Python, FORTRAN, C++, Bash

Automatic Differentiation: Odyssee, Tapenade

Parallel Programming: MPI, OpenMP

Environments: GCC, Clang, Make/CMake,MS Visual Studio, VS Code, TFS

Document Processing: LaTeX, Markdown, HTML

Research Areas: Numerical Analysis, Scientific Computing, Signal Processing, Machine Learning