Troy Lee Henderson, IV
Professor of Mathematics
University of Mobile

315 Weaver Hall • 5735 College Parkway • Mobile, AL 36613

(251) 442-2298 • thenderson@umobile.edu • http://www.tlhiv.org

Education

- **Doctor of Philosophy, Mathematics**, August 2005. Texas A&M University, College Station, TX
  Dissertation: *Causal Equivalence of Frames*
  Advisor: *David R. Larson*

- **Master of Arts, Mathematics**, August 1999. University of Alabama, Tuscaloosa, AL
  Thesis: *The Construction and Application of Wavelet Analysis*
  Advisor: *Zhijian Wu*

- **Bachelor of Science, Electrical Engineering**, May, 1997. University of Alabama, Tuscaloosa, AL
  Advisor: *Robert W. Scharstein*

Postdoctoral Positions

- **Professor**, *May 2017 – present*
  University of Mobile, Mobile, AL

- **Associate Professor**, *May 2013 – April 2017*
  University of Mobile, Mobile, AL

- **Assistant Professor**, *August 2007 – April 2013*
  University of Mobile, Mobile, AL

- **Assistant Professor, Davies Fellow**, *July, 2006 – June, 2007*
  United States Military Academy, West Point, NY

- **Assistant Professor**, *July, 2005 – June, 2006*
  United States Military Academy, West Point, NY

Predoctoral Positions

- **NSF Funded GK-12 Resident Mathematician**, *June, 2004 – December, 2004*
  Texas A&M University, College Station, TX

  The long-term goal of the NSF GK-12 program is to improve the content of science, technology, engineering, and mathematics (STEM) in rural grades 6-8. Graduate Fellows serve as role models and stimulate students' interest in STEM by conveying the excitement of research and discovery.

- **NSF VIGRE Research Assistant**, *September, 2003 – May, 2004*
  Texas A&M University, College Station, TX
  Advisor: *David R. Larson*

  Developed strategies for the solution of problems in Linear Algebra, Operator Theory, and Analysis in the sub-area of wavelets and frames.

- **Graduate Teaching Assistant**, *September, 1999 – August, 2003*
  Texas A&M University, College Station, TX

  Instructed mathematics courses for engineering, business, and mathematics majors.

- **Graduate Teaching Assistant**, *January, 1998 – August, 1999*
  University of Alabama, Tuscaloosa, AL

  Instructed mathematics courses primarily for business and mathematics majors.

- **Online Signal Processing Course Webmaster**, *August, 1997 – December, 1997*
  University of Alabama, Tuscaloosa, AL

  Designed, constructed, and maintained the website for an online course in Signal Processing in the Department of Electrical Engineering.

- **Undergraduate Research Assistant**, *January, 1996 – May, 1996*
  University of Alabama, Tuscaloosa, AL
  Advisor: *Robert W. Scharstein*

  Developed numerical transform methods for signals and systems.

Selected Publications

- *Modeling the Steeping of Southern Sweet Iced Tea*, Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations" (SIMIODE), 2016.

- *Modeling the Smoking Process of Southern Barbecue*, Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations" (SIMIODE), 2016.

- *User-friendly web utilities for generating LaTeX output and METAPOST graphics*, TUGboat, vol. 33 (2012), no. 1., pp. 48-52.

- *A beginner's guide to METAPOST for creating high-quality graphics*, TUGboat, PracTeX Proceedings, vol. 28 (2007), no. 1, pp. 84-90.
  ⟨Editors requested simultaneous publication with PracTeX Journal⟩

- *A beginner's guide to METAPOST for creating high-quality graphics*, PracTeX Journal, (2006), no. 4.
  ⟨Editors requested simultaneous publication with TUGboat PracTeX Proceedings⟩

- *Embedding fonts in METAPOST output*, TUGboat, vol. 26 (2005), no. 3, pp. 250-252.

Teaching Experience

- **Instruction** in elementary to advanced mathematics at University of Mobile (9+ years).

- **Instruction** in single and multi-variable Calculus at United States Military Academy (3 semesters).

- **Resident Mathematician** to Somerville Middle School, Somerville, TX. Served as a role model to stimulate students'nterest in mathematics by conveying the excitement of research and discovery (2 semesters).

- **Instruction** in Business Calculus at Texas A&M University (1 semester) and elementary mathematics courses at Texas A&M University (3 semesters).

- **Recitation** in Calculus for Engineers at Texas A&M University (8 semesters).

- **Mathematics Computer Laboratory Instruction** in Calculus for Engineers. Instructed students in the use of Maple (7 semesters) and Matlab at Texas A&M University (1 semester).

- **Graded** for Business Calculus at Texas A&M University (1 semester).

- **Instruction** in Pre-calculus and College Algebra at University of Alabama (2 semesters).

Professional Talks

- **TUG 2012**, July 16-18
  The 33rd Annual Meeting of the T$_E$X Users Group
  Omni Parker House, Boston, MA

- **American Mathematical Society 2008 Spring Southeastern Section Meeting**, March 29.
  Special Session on Wavelets, Frames, and Multi-Scale Constructions
  Louisiana State University, Baton Rouge, LA

- **Joint Mathematics Meetings**, January 7, 2007
  AMS Special Session on Frames and Wavelets in Harmonic Analysis, Geometry, and Applications
  New Orleans, LA

- **Joint Mathematics Meetings**, January 6, 2007
  MAA Session on Communication Theory in Undergraduate Courses
  New Orleans, LA

- **PracT$_E$X 2006**, July 31
  Rutgers University, Piscataway, NJ

- **Colloquium, Department of Computer Science**, March 30, 2006
  SUNY New Paltz, New Paltz, NY

- **American Mathematical Society 2005 Fall Western Section Meeting**, November 11-13
  Special Session on Wavelets, Frames, and Related Expansions
  University of Oregon, Eugene, OR

- **Great Plains Operator Theory Symposium 2005**, June 7-12
  University of Central Florida, Orlando, FL

- **American Mathematical Society 2005 Spring Southeastern Section Meeting**, March 18-19
  Special Session on Advances in the Study of Wavelets and Multi-wavelets
  Western Kentucky University, Bowling Green, KY

- **Colloquium, Department of Mathematics**, November 10, 2004
  University of Alabama, Tuscaloosa, AL

- **American Mathematical Society 2004 Fall Southeastern Section Meeting**, October 16-17
  Special Session on Wavelets, Frames, and Sampling
  Vanderbilt University, Nashville, TN

Promotion and Awards

- **Mitford Ray Megginson Reserch Award**, May, 2017
  University of Mobile, Mobile, AL

- **Promotion to Rank of Professor**, May, 2017
  University of Mobile, Mobile, AL

- **Promotion to Rank of Associate Professor**, May, 2013
  University of Mobile, Mobile, AL

- **AUF Scholar**, September, 2004
  Texas A&M University, College Station, TX

- **NSF GK-12 Graduate Fellow**, June 2004
  Texas A&M University, College Station, TX

- **NSF VIGRE Research Assistant Fellow**, September 2003
  Texas A&M University, College Station, TX

- **Engineering Science and Mechanics Honor Society**, January 1997
  University of Alabama, Tuscaloosa, AL

- **Undergraduate Research Scholar**, January 1996
  University of Alabama, Tuscaloosa, AL

Selected Software Developments

- **PRAXIS Scores Report Calculator** ⟨developed for Carolyn Corliss⟩
  Generates reports for State of Alabama certification requirements

- **Function Grapher** ⟨http://www.tlhiv.org/mpgraph⟩
  Allows users to easily graph functions, parametric curves, and surfaces

- **MetaPost Previewer** ⟨http://www.tlhiv.org/mppreview⟩
  Tests METAPOST code and generates EPS, PDF, and SVG output for the generated graphics

- **LaTeX Previewer** ⟨http://www.tlhiv.org/ltxpreview⟩
  Used to experiment with LaTeX without concern for installation and compilation processes

- **Numerical Integrator** ⟨http://www.tlhiv.org/integration⟩
  Computes the definite integral of a mathematical function numerically

- **Gaussian Quadrature Nodes and Weights** ⟨http://www.tlhiv.org/quadrature⟩
  Numerically computes Gaussian quadrature nodes and weights for any order

- **Root Finder** ⟨http://www.tlhiv.org/rootfinder⟩
  Locates a root of a real-valued mathematical function on a given interval

- **Quadratic Factorer** ⟨http://www.tlhiv.org/factor⟩
  Demonstrates the process of factoring quadratics over the integers

- **Simple Polygon Calculator** ⟨http://www.tlhiv.org/polygon.html⟩
  Calculates the perimeter, area, and centroid of simple polygons

- **Rational Representation of Real Numbers** ⟨http://www.tlhiv.org/rational⟩
  Computes rational approximations of real numbers

- **Loan Calculator** ⟨http://www.tlhiv.org/LoanCalculator⟩
  Computes the principal, payment, interest rate, or term for compound interest loans

Computer Languages and Applications

- **Programming/Markup Languages:**, BASH, C, HTML, JavaScript, and Perl

- **Typesetting:** LaTeX, METAPOST, TeX, and ConTeXt

- **Operating Systems:** Linux, Unix, and Microsoft Windows

- **Mathematics Applications:** Maple, Mathematica, Maxima, Matlab, and Octave

- **Desktop Applications:** Gimp/Photoshop, Inkscape/Illustrator, and standard office applications