Jeffrey J. Dodd

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ACADEMIC EMPLOYMENT

Jacksonville State University

> Professor of Mathematics, 2008-present
> Associate Professor of Mathematics, 2002-2008
> Assistant Professor of Mathematics, 1996-2002

University of Maryland at College Park

> Instructor, Mathematics Department, 1995-1996
> Graduate Teaching Assistant, Mathematics Department, 1989-1995

University of Pennsylvania

> Graduate Teaching Assistant, Mathematics Department, 1987-1988

University of Maryland at College Park

> Strauss Undergraduate Teaching Assistant, Mathematics Department, 1984-1985

OTHER PROFESSIONAL EMPLOYMENT

ANSER (Analytic Services Inc.), Arlington VA

> Research Analyst, 1988-1989.

> Worked in the Command, Control, and Communications ("C3") Division of this not-for-profit public service research institute to provide scientific and technical support to Air Force clients. Prepared written reports and oral briefings on several issues.

EDUCATION

Ph.D. in Mathematics, University of Maryland at College Park, 1996

> Thesis in partial differential equations, *Convective Stability of Shock Profile Solutions of a Modified KdV-Burgers Equation*, directed by Robert L. Pego.

M.S. in Mathematics, University of Pennsylvania, 1988

> Passed the written qualifying exams at the Ph.D. level (in real and complex analysis, topology, and algebra).

B.S. in Mathematics, Magna Cum Laude, University of Maryland at College Park, 1985

> Earned a cumulative GPA of 3.905. Completed the core eight-course physics sequence for physics majors, including upper level courses in mechanics, electricity and magnetism, and modern physics.

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AWARDS AND HONORS

Faculty Scholar Lecturer Award, Jacksonville State University, 2017
>   This is university's highest award for scholarship.

Distinguished Service Award, JSU College of Arts and Sciences, 2007
>   This was the former College of Arts and Sciences' highest award for service.

Dean's Service Award, JSU College of Arts and Sciences, 2005
>   Recipients were selected based on recommendations from the department heads.

Distinguished Service Award, JSU College of Arts and Sciences, 2002
>   This was the former College of Arts and Sciences' highest award for service.

Dean's Service Award, JSU College of Arts and Sciences, 1998
>   Recipients were selected based on recommendations from the department heads.

Graduate Fellowship, University of Pennsylvania, 1985-1987
>   Awarded by the Mathematics Department, tuition remission and stipend with no teaching duties.

Student Speaker, University of Maryland at College Park Commencement, May 1985
>   Gave the student address at the College of Mathematical and Physical Sciences Commencement.

Phi Kappa Phi National Honor Society, 1984-present
>   Inducted as a student at the University of Maryland, charter faculty member of the JSU Chapter.

Chancellor's Scholarship, University of Maryland at College Park, 1981-1985
>   Covered in-state tuition and fees.

TEACHING

Courses Taught at Jacksonville State University, 1996-present:

LS 100 First Year Orientation
MS 100 Intermediate Algebra
MS 108 Exploring Mathematics
MS 110 Finite Mathematics
MS 112 Precalculus Algebra
MS 113 Precalculus Trigonometry
MS 115 Precalculus Algebra and Trigonometry
MS 126 Calculus I
MS 127 Calculus II
MS 227 Calculus III
MS 300 Introduction to Advanced Mathematics
MS 309 Combinatorics
MS 323 College Geometry
MS 344 Differential Equations
MS 352 Linear Algebra
MS 390 Numerical Analysis

MS 397 Directed Readings in Undergraduate Mathematics
MS 415 Advanced Calculus I
MS 416 Advanced Calculus II
MS 441 Abstract Algebra I
MS 451 Complex Variables
MS 480 Introductory Topology
MS 484 Partial Differential Equations
MS 499 Undergraduate Research in Mathematics
MS 515 Real Analysis I
MS 516 Real Analysis II
MS 523 Geometry for Teachers
MS 526 Analytic Geometry for Teachers
MS 528 Theory of Equations and Functions for Teachers
MS 530 Foundations in Calculus for Teachers
MS 533 Topics in Modern Analysis for Teachers
MS 549 Selected Topics in Mathematics for Teachers
MS 598 Directed Readings

Courses Taught at The University of Maryland at College Park, 1984-1985 and 1989-1996:

Math 001 Review of High School Algebra

Math 002 Advanced Review of High School Algebra

Math 110 Finite Mathematics

Math 111 Introduction to Probability*

Math 115 Precalculus

Math 140 Calculus 1 (problem/discussion sections)

Math 141 Calculus 2 (problem/discussion sections)

Math 240 Introduction to Linear Algebra

* For the Minority Scholars in Computer Science and Engineering Program Summer Program, 1992.

Cooperative Learning Projects at the University of Maryland at College Park, 1991-1995:

ACCEL Project, 1991-1994: a restructuring of the traditional discussion sections for Math 140-141 (Calculus 1 and 2 for science and mathematics majors) as cooperative learning workshops.

- Selected as one of two graduate students to teach the pilot workshop sections in 1991.
- Taught workshop sections from the Spring of 1991 through the Spring of 1994.
- Contributed to the evolution of the program both by classroom experimentation and through vigorous discussion and debate with professors and other graduate assistants.

C2 ("Close Contact") Calculus, 1994-95: an expanded version of ACCEL making the workshop method available to over two hundred Math 140-141 students, and featuring the TI-81 graphics calculator.

- Wrote new problem sets for use in C2 cooperative learning workshop sections with another graduate assistant and textbook author Professor Denny Gulick.
- Participated in planning many aspects of the C2 program, including a two-day teacher orientation.
- Assisted in evaluating and adjusting the program as the year progressed.

Courses Taught at the University of Pennsylvania, 1987-1988:

Math 140 Calculus 1 (problem solving and discussion sections)

Math 141 Calculus 2 (problem solving and discussion sections)

Math 360 Advanced Calculus

MASTER'S DEGREE THESIS STUDENTS

Christopher Mount: *The Napkin Ring Problem: Generalizations and Related Problems*, 2019.

Kristopher Simino: *The Equal Area Zones Property*, 2011.

ACADEMIC ADVISING

Advisor, JSU MCIS Department: Regularly advised mathematics majors during preregistration, open enrollment periods, and Visitation Days (Parents' Days), 1996-2019.

Faculty Mentor, JSU Freshman Orientation Program: Received 30 hours of training, staffed six orientation sessions, and provided academic advisement for 60 freshman during their first two semesters at JSU, 2000.

Advise-Five Program, University of Maryland at College Park: volunteered each year to serve as the principal academic advisor for five freshmen entering with undecided majors, meeting three times per semester with each student, 1994-1996.

Mentors Program, Mathematics Department, University of Maryland at College Park: served as an informal advisor to incoming graduate students, 1990-1996.

PUBLICATIONS AND PRESENTATIONS

RESEARCH PAPERS IN REFEREED JOURNALS

- *Why Curves Curve: the Geodesics on a Torus*, Mathematics Magazine, Vol. 95 No. 3 (2022), pp. 230–239.
- *Extrinsic Ricci Flow on Surfaces of Revolution*, Geometriae Dedicata, Vol. 207 Issue 1 (2020), pp. 81–94.
- *The Archimedean Projection Property*, Advances in Geometry, Vol. 17 No. 3 (2017), pp. 363–372.
- *A Characteristic Averaging Property of the Catenary*, American Mathematical Monthly, Vol. 123 No. 7 (2016), pp. 683–688.
- *On the Smoothness of the Equizonal Ovaloids*, Journal of Geometry, Vol. 103 No. 3 (2012), pp. 409–416.
- *Which Surfaces of Revolution Core Like a Sphere?*, Mathematics Magazine, Vol. 83 No. 3 (2010), pp. 191–199.
- *Generalizing the Equal Area Zones Property of the Sphere*, Journal of Geometry, Vol. 90 No. 1-2 (2008), pp. 47–55.
- *Spectral Stability of Undercompressive Shock Profile Solutions of a Modified KdV-Burgers Equation*, Electronic Journal of Differential Equations, Vol. 2007 (2007), No. 135, pp. 1–13.
- *Some Combinatorial Questions*, Alabama Journal of Mathematics, Vol. 24 No. 2, Fall 2000.
- *A Novel Tournament: A New Combinatorial Design for the Final Round of the Alabama Statewide Mathematics Contest*, Alabama Journal of Mathematics, Vol. 23 No. 1, Spring 1999.

TEXTBOOK CONTRIBUTIONS

The following projects (exposition and exercises) appear, under my name and affiliation, in one or more of the 3rd, 4th, 5th, 6th, and 7th editions (copyright dates 2006, 2011, 2012, 2016, and 2020 respectively) of Advanced Engineering Mathematics, by Dennis G. Zill and Warren S. Wright, Jones and Bartlett Learning (Burlington, MA). Those not included in the current edition of the text are still available at the Student Companion Website and Projects Center for the text.

- "The Paris Guns: How the Science of Ballistics Entered the Space Age"
- "Tricky Timing: The Isochrones of Huygens and Leibniz"
- "When Differential Equations Invaded Geometry: Inverse Tangent Problems in the 17th Century"
- "Potassium-Argon Dating"
- "Making Waves: Convection, Diffusion, and Traffic Flow"
- "Two Properties of the Sphere"
- "Vibration Control: Vibration Isolation"
- "Vibration Control: Vibration Absorbers"
- "The Uncertainty Inequality in Signal Processing"
- "Minimal Surfaces"

INVITED PRESENTATIONS

- "The Alabama Statewide Mathematics Contest: Can One Contest Fit All?": Alabama Council of Teachers of Mathematics (ACTM) Annual State Conference, Auburn University at Montgomery, Montgomery AL, November 15, 2002.

- "Convective Stability of Shock Profile Solutions of a Modified KdV-Burgers Equation": Society for Industrial and Applied Mathematics (SIAM) Minisymposium on Dispersive Equations, Annual Joint Meetings of the American Mathematical Society (AMS) and the Mathematical Association of America (MAA), Washington D.C., January 21, 2000.

Contributed Presentations

- "What Else Cores Like a Sphere?": Annual Meeting of the Alabama Association of College Teachers of Mathematics (AACTM), February 28, 2009.
- "Generalizing Some Geometric Properties of the Sphere": Colgate University Mathematics Department Seminar Series, November 12, 2007.
- "Generalizing a Coring Property of the Sphere": 2007 Annual Meeting of the Southeastern Section of the Mathematical Association of America, March 17, 2007.
- "Rings and Things": Mathfest 2006 (Annual Summer Meeting of the Mathematical Association of America), August 12, 2006.
- Panelist, "The No Child Left Behind Act": panel discussion at the Annual Meeting of the Southeastern Section of the Mathematical Association of America, March 26, 2004.
- "Mathematics Program Assessment at Jacksonville State University": article in a report prepared and distributed by Bernie Madison of the University of Arkansas at his Assessment Workshop at the Annual Meeting of the Southeastern Section of the Mathematical Association of America, March 26, 2004.
- "Using Challenging Problems from Elementary Mathematics to Stimulate and Motivate Preservice and Inservice Teachers": Annual Meeting of the Southeastern Section of the Mathematical Association of America (MAA-SE), Huntingdon College, Montgomery AL, March 30, 2001.
- "Generalizing the Equal Area Zones Property of the Sphere": Annual Joint Meetings of the American Mathematical Society (AMS) and Mathematical Association of America (MAA), New Orleans LA, January 13, 2001.
- "Some Combinatorial Questions": Annual Meeting of the Alabama Association of College Teachers of Mathematics (AACTM), Troy State University, Troy AL, February 12, 2000.
- "What Else Slices Like a Sphere?": Annual Meeting of the Alabama Association of College Teachers of Mathematics (AACTM), Jacksonville State University, Jacksonville AL, February 27, 1999.
- "Vignettes From the History of the Mathematics of Voting": JSU Math Department - Math Club Colloquium, February 11, 1998.
- "Alabama Commission on Higher Education (ACHE) Viability Standards" (with James Stagliano): Annual Meeting of the Alabama Association of College Teachers of Mathematics (AACTM), University of Mobile, Mobile AL, February 22, 1997.
- "An Introduction to the Mathematics of Voting": Fairview High School Mu Alpha Theta Math Club, Cullman AL, December 10, 1996.

For the Alabama Statewide Mathematics Contest

- *Results of the Statewide Contest*, Alabama Journal of Mathematics: Vol. 22 No. 2 1998, Vol. 23 No. 2 1999, Vol. 24 No. 2 2000, Vol. 25 No. 2 2001, Vol. 26 No. 2 2002, Vol. 27 No. 2 2003.
- *Algebra II with Trigonometry Examination*, 1999-2003: editor and contributing author, 2009: editor and co-author.
- *Geometry Examination*, 1999-2003: editor and contributing author.
- *Final Round Ciphering Questions*, 1998-2003: editor and co-author.

EDITORIAL BOOK REVIEW

- *Some Books on the Art of Problem Solving*, Alabama Journal of Mathematics: Vol. 26 No. 1 2002.

SERVICE: NATIONAL AND REGIONAL

JOURNAL REFEREE
- **Mathematics Magazine** (a publication of the Mathematical Association of America): 2011, 2012, 2013, 2016, and 2018.
- **Journal of the Alabama Academy of Science**: 2008 and 2010.

CONFERENCE ORGANIZATION
- **Contributed Paper Session Co-organizer**: "Encouraging Underrepresented Groups of Students in Math Contests," Annual Joint Meetings of the American Mathematical Society (AMS) and the Mathematical Association of America (MAA), Baltimore, January 17, 2003.

SOUTHEASTERN SECTION OF THE MATHEMATICAL ASSOCIATION OF AMERICA (MAA-SE)
- **Departmental Liaison to the Mathematical Association of America (MAA)**, 1997-2016.
- **MAA-SE Distinguished Service Award Selection Committee**, 2003-2011.
- **MAA-SE Alabama State Director**, 2000-2003.

STATE PROFESSIONAL ORGANIZATIONS
- **Director, Alabama Statewide Mathematics Contest**, sanctioned by the Alabama Council of Teachers of Mathematics(ACTM), 1998-2003.

  The contest served approximately 1200 students from approximately 60 high schools located all over the state. It took place in two rounds: a first round consisting of three written examinations (Algebra, Geometry, and Comprehensive) administered at eight different university campuses throughout the state, followed by a second round "ciphering" (Jeopardy style) tournament here at JSU. My administrative and creative duties for the contest comprised an annual cycle of activity starting in early August and stretching well into May each year.

- **Site Contact, Alabama Statewide Mathematics Contest** (local administration of the first round tests), 2012-present.
- **Webmaster, Alabama Statewide High School Mathematics Contest**, 1998-2016.
- **Executive Council, Alabama Association of College Teachers of Mathematics (AACTM)**, 1997-1999.

PAID CONSULTING
- **Program Reviewer**, Mathematics Department, The Donoho School, Anniston, AL (joint work with Jan Case), 2010.

DEVELOPMENTAL TEXTBOOK REVIEWS FOR PUBLISHERS
- Partial Differential Equations, preliminary draft, by Michael V. Klibanov and Jingzhi Li, for Mansi Kabra, Editorial Department, Taylor & Francis Group of CRC Press, October 2021.
- Finite Mathematics and Its Applications, 11th ed., by Larry J. Goldstein, David L. Schneider, and Martha J. Siegel, for Joanne Wendelken and Alison Oehmen, Editorial Assistants for Applied Mathematics, Pearson Higher Education, September 2014 and September 2015.
- Calculus, 3rd ed., by Jon Rogawski and Colin Adams, for Katrina Wilhelm, Development Editor, W. H. Freeman and Company, December 2013.
- Algebra: Form and Function, by William G. McCallum, Deborah Hughes-Hallett, and Eric Connally, for John Wiley and Sons Inc., December 2009.

- <u>How to Read and Do Proofs</u>, 4th ed., by Daniel Solow, for Shannon L. Corliss, Associate Editor for Mathematics, John Wiley and Sons Inc., Spring 2008.
- <u>Prelude to Calculus</u>, preliminary edition, by Sheldon Axler for Danielle Amico, Editorial Assistant at John Wiley and Sons, Inc., July 2006.
- <u>Algebra: Form and Function, 1st ed.</u>, by William G. McCallum, Deborah Hughes-Hallett, and Eric Connally, for John Wiley and Sons Inc., December 2004.
- <u>Just in Time Algebra and Trigonometry for Students of Calculus</u>, 2nd ed., by Ronald I. Brent and Guntram Mueller, for Rachel S. Reeve, Senior Project Editor, Addison-Wesley, Boston MA, June 2004.
- <u>Differential Equations and Mathematical Modeling</u> (new book), for Amy Gembala, Development Editor, McGraw-Hill, San Francisco CA, July 2003.
- <u>Differential Equations and Mathematical Modeling</u> (new book), for Michelle Munn, Development Editor, McGraw-Hill, San Francisco CA, October 2000.
- <u>Untitled new book on applied calculus</u>, for Gale Epps, Editorial Assistant, Prentice Hall, Upper Saddle River NJ, August 2000.
- <u>Advanced Engineering Mathematics</u>, 2nd ed. by Dennis G. Zill and Michael R. Cullen, for Barbara Lovenvirth, Developmental Editor, Jones and Bartlett, Norwood MA, December 1998.
- <u>Calculus, 5th ed.</u> by C. Henry Edwards and David E. Penney, for Gale Epps, Editorial Assistant, Prentice Hall, Upper Saddle River NJ, March 1997.

SERVICE: JACKSONVILLE STATE UNIVERSITY

University Level

Leadership Positions
- Chair, Policies Committee, Faculty Senate, 2020-2022.
- Chair, Tenure and Promotion Appeals Committee, 2017.
- President, Faculty Senate, Two Terms, 2004-2006.
- Vice President and President Elect, Faculty Senate, 2003-2004.
- Chair, Elections Committee, Faculty Senate, 2004.
- Task Team Leader, Strategic Planning Committee, 2006.

Other Active University Service
- Academic Honesty Policy Committee, 2021-present
- MCIS Department Representative, Faculty Senate, 2002-2006, 2018-present.
- School of Arts and Sciences Policies Task Force, 2017
- Organizing Committee, Charter Member, and Publicity Officer, JSU Chapter of the Phi Kappa Phi Honor Society, 2001-2009.
- Strategic Planning Committee, 2005-2008.
- Regional Science Olympiad, 1997-2008.
- Recruitment and Retention Committee, 2005-2008.
- Program Review Team (Internal Review of the Learning Services Department), 2006.
- Transportation Committee, 2005-2006.
- Admissions Committee, 2005-2006.
- Ad-Hoc Athletic Facilities Development Committee, 2005-2006.

- Graduate Council, 1997-2003.
- Budget Committee (Expenditures Subcommittee), 1998-2002.
- Graduate Appeals Committee, 1998-1999.
- Faculty Senate Ad Hoc Committee for Academic Quality, 1998-1999.

DEPARTMENT LEVEL

Leadership Positions
- Chair, Mathematics Undergraduate Curriculum Committee, 1999-2003, 2008-present.
- Chair, Mathematics Graduate Curriculum Committee, 1999-2004, 2005-2012.
- Mathematics Program Coordinator, 2004-2005.
- Co-chair, Mathematics Undergraduate Curriculum Committee, 2003-2004.
- Faculty Advisor, JSU Math Club and JSU Student Chapter of the Mathematical Association of America (MAA), 1996-1999.

Other Active Departmental Service (at least three years or currently)
- Outcomes Assessment Committee - Major Field Test (MFAT)
- Placement Committee
- Mathematics Search (Hiring) Committees
- Colloquium Committees
- Visitation Days (Parents' Days) "Browse Sessions"
- MATHCOUNTS Tournament - Local Administration

ACTIVITIES FUNDED ABOVE DEPARTMENT LEVEL

- JSU University Travel and Self Improvement Grant, 2007: funding a presentation at the Annual Meeting of the Southeastern Section of the MAA, Statesboro GA., March 17, 2007.
- JSU Faculty Development Grant, 2000: funding a presentation at the Joint Meetings of the AMS and MAA, New Orleans, LA, January 13, 2001.
- JSU Faculty Development Grant, 1999: funding a presentation at the Joint Meetings of the AMS, MAA, and SIAM, Washington D.C., January 21, 2000.
- Project NExT ("New Experiences in Teaching") - Southeast Fellowship: partial travel funding for two annual conferences of the Southeastern Section of the Mathematical Association of America (MAA-SE), funded by MAA-SE, 1998-1999.
- Mathematicians and Education Reform (MER) Forum on Teacher Education and Mathematics Departments, Chicago IL, November 7-10, 1996: selected from a national pool of applicants as one of 50 attendees receiving room and board funded by the National Science Foundation (NSF).

PROFESSIONAL MEMBERSHIPS

- American Mathematical Society (AMS)
- Mathematical Association of America (MAA)
- National Council of Teachers of Mathematics (NCTM)
- Alabama Council of Teachers of Mathematics (ACTM)
- Alabama Association of College Teachers of Mathematics (AACTM)
- Kappa Mu Epsilon (KME) National Mathematics Honor Society (Charter Member, JSU Chapter)