

ANNUAL REPORT

2007-2008

Annual Report
Mathematics Department
2007

Part 1
Department Head's Summary

Learning

- 83 BS degrees.
- 4 completed undergraduate research projects, including one senior honors thesis, and 5 students in the new mathematical modeling seminar. A team of three students from the seminar were awarded honorable mention in the international Mathematical Contest in Modeling.
- Full-Emporium courses now number seven, all but two offered in fall, spring, and summer. Full-Emporium courses enroll over 5500 students in the fall and over 2700 students in the spring.
- 15 MS degrees and 4 PhD degrees.
- There were 53 graduate students in GTA positions, 8 GRA's, 2 supported by research grants or fellowships originating outside of the department, and 3 supported by assistantships negotiated as part of start-up or retention packages.
- Peru, Tunisia, Algeria, Germany, and China remain productive sources of international graduate students. MOU's promise to add the Czech Republic to that list.

Discovery

- Total expenditures for Math and ICAM in 2007 were \$1,216,368, distributed among roughly 50 grants awarded to 26 members of the faculty.
- 14 members of the faculty serve as editors for a total of 43 journals.
- Mark Shimozone is one of three Principal Investigators on the National Science Foundation Focused Research Group: Affine Schubert Calculus: Combinatorial, Geometric, Physical, and Computational Aspects.
- Reinhard Laubenbacher is a Principal Investigator, John Burns and Lizette Zietsman are Co-Principal Investigators, and Jeff Borggaard, and Henning Mortveit are Senior Personnel on the National Science Foundation Research Experience for Undergraduates: Modeling and Simulation in Systems Biology.

Engagement

- Wayne Patty continued his outreach to in-service public school teachers through the National Science Foundation Local Systemic Change grant Systemic Reform of Mathematics K-5 for Virginia.
- Susan Hagen is a member of the management team of the partnership grant Virginia's Middle Mathematics Project
- The Virginia Tech Regional Mathematics included 67 colleges represented by 397 contestants.
- The thirteenth annual Women in Mathematics: Career Day at Virginia Tech attracted 250 students from 19 middle and elementary schools.
- During Math Awareness Month we once again sponsored a poster contest for Montgomery and Giles County K-6 students.

Honors and Awards

- Eileen Shugart received a 2007 William E. Wine award.
- Ezra “Bud” Brown was elected Governor of the Mathematical Association of America’s MD/DC/VA section.
- Serkan Gugercin was awarded a National Science Foundation Early CAREER Award.

Diversity

- Of the six students recognized as outstanding graduating seniors, overall and in degree options, five, including the overall outstanding senior, were women.
- Heath Hart was the Summer Mathematics Director for the Center for Enhancement of Engineering Diversity.
- Susan Hagen taught in the summer VT-Stars program, a developmental program for Virginia’s at-risk youth.
- Sue Hagen incorporated into Math 4644 (Secondary Math with Technology) materials addressing the use of technology to support mathematics learning by individuals with disabilities.

Future Directions

- Inclusion of industrial partners and their problems in the math modeling seminar.
- Reorganization of our applied and computational option’s curriculum.
- Increased use of information technology for diagnostics, remediation, and ultimately increased success rates in calculus.

Part 2

Academic Accomplishments

Learning

We awarded 83 BS degrees during the period running from June, 2007, through May, 2008.

There are four degree options, with advisors who specialize in each option, as well as a department career advisor (general career advice, notification of opportunities, and assistance with individual placements) and an undergraduate research coordinator (promotes undergraduate research and advises students seeking mentors).

We continue to develop our math education program, with an early field experience the most recent addition.

With the help of a \$114,000 grant from the Provost's office, we made Math 1535-1536 an Emporium course. There are seven semester-long courses (all but two offered in fall, spring, and summer) that are in full-Emporium format. Over 5500 students enroll in these courses in the fall, and over 2700 students enroll in them in the spring. Over the past year we have commissioned and received two external reports on the Emporium. Neil Hauenstein and Emilee Tison, of the Psychology Department, studied the operations and organization of the Emporium. Graduate students in the University of Georgia's Department of Educational Psychology and Instructional Technology studied issues of student satisfaction, faculty perceptions, and use of information communication technologies in Math 1015.

During the 2007-2008 academic year, four students completed undergraduate research projects, including one senior honors thesis, and five students participated in the undergraduate modeling seminar that was developed and offered for the first time.

We awarded 15 MS degrees and 4 PhD degrees during the period running from June, 2007, through May, 2008. Our efforts to recruit international students are resulting in an increase in the number of domestic and international students seeking PhD's. We are particularly active in recruiting in Peru, Tunisia, and Algeria. Our agreements with the University of Trier and the University of Karlsruhe continue to bring in exchange students from Germany. We expect two more students from these programs to arrive in August, 2008. In addition to learning mathematics, our graduate students are trained as teachers by our extensive GTA training and mentoring program developed and led by our GTA coordinator Eileen Shugart.

As a result of participation in the 2007 International Faculty Development Program, Eric de Sturler has started the development of joint PhD programs with TU Berlin, the Czech Academy of Sciences, and Charles University in Prague. Two of these initiatives have progressed to signed Memoranda of Understanding.

Discovery

Total expenditures for Math and ICAM in 2007 were \$1,216,368, distributed among roughly 50 grants.

In 2007 the faculty published over 80 refereed articles and gave over 120 invited lectures.

Assistant professors in analysis, algebra, and mathematics education joined the department in Fall, 2007.

The department employed four visiting assistant professors and one postdoc during 2007. There was one year-long research visitor.

Mark Shimozone is one of three Principal Investigators on the National Science Foundation Focused Research Group: Affine Schubert Calculus: Combinatorial, Geometric, Physical, and Computational Aspects.

Reinhard Laubenbacher is a Principal Investigator, John Burns and Lizette Zietsman are Co-Principal Investigators, and Jeff Borggaard, and Henning Mortveit are Senior Personnel on the National Science Foundation Research Experience for Undergraduates: Modeling and Simulation in Systems Biology.

Engagement

Wayne Patty continued his outreach to in-service public school teachers through the National Science Foundation Local Systemic Change grant Systemic Reform of Mathematics K-5 for Virginia.

Susan Hagen is a member of the management team of the partnership grant Virginia's Middle Mathematics Project. In this capacity Susan contributed to the development of two new courses first taught to in-service teachers during 2007.

The Virginia Tech Regional Mathematics Contest, in its twenty-ninth year, continued to grow. This year, for the first time, Princeton University was among the 67 colleges represented by 397 contestants. The contest is no longer regional (Harvey Mudd College competed.) or even national (The University of Prince Edward Island competed.).

The thirteenth annual Women in Mathematics: Career Day at Virginia Tech attracted 250 students from 19 middle and elementary schools. Three alumnae participated in the Career Day activities.

During Math Awareness Month we once again sponsored a poster contest for Montgomery and Giles County K-6 students. Winners, their parents, and teachers were invited to a reception in our Commons Room.

Honors and Awards

Eileen Shugart received a 2007 William E. Wine award.

Ezra "Bud" Brown was elected Governor of the Mathematical Association of America's MD/DC/VA section.

Serkan Gugercin was awarded a National Science Foundation Early CAREER Award.

Undergraduate Kevin Finelli won a Barry M. Goldwater Scholarship.

Eight undergraduates were invited to join Phi Beta Kappa.

The undergraduate team of Andrew Dove, Caleb Magruder, and Harold Metz was awarded honorable mention in the COMAP Mathematical Contest in Modeling.

Diversity

Of the six students recognized as outstanding graduating seniors, overall and in degree options, five, including the overall outstanding senior, were women.

Heath Hart was the Summer Mathematics Director for the Center for Enhancement of Engineering Diversity.

Susan Hagen taught in the summer VT-Stars program, a developmental program for Virginia's at-risk youth.

Sue Hagen incorporated into Math 4644 (Secondary Math with Technology) materials addressing the use of technology to support mathematics learning by individuals with disabilities.

Future Plans

We plan to develop the modeling seminar into a vehicle for interactions among faculty, students, and corporations on problems involving mathematical modeling and research. In this direction we have already begun discussions with SAIC.

We have begun detailed discussions about a reorganization of our applied and computational option's curriculum.

We have accepted a free trial offer of ALEKS as a replacement for our calculus placement test. ALEKS offers sophisticated diagnostic and remediation capability, the use of which has resulted in improved calculus success rates at the University of Illinois and other universities.

We plan to continue distributing Emporium responsibilities more widely among the faculty.

FACULTY

Hatcher Professor

Burns, John

Class of 1950 Professors

Renardy, Michael

Renardy, Yuriko

Alumni Distinguished Professor

Brown, Erza

Professors

Adjerid, Slimane

Ball, Joseph

Beattie, Christopher

Borggaard, Jeffrey

Day, Martin

Floyd, William

Green, Edward

Greenberg, William

Hagedorn, George

Haskell, Peter

Herdman, Terry

Holub, James

Kim, Jong Uhn

Klaus, Martin

Kohler, Werner

Laubenbacher, Reinhard

Lin, Tao

Linnell, Peter

Lloyd, Gwendolyn

Parry, Charles

Patty, C. Wayne

Prather, Carl

Quinn, Frank

Rogers, Robert

Rossi, John

Russell, David

Sachs, Ekkehard

Shimozono, Mark

Snider, Robert

Sun, Shu Ming

Turner, James C

Wheeler, Robert

Associate Professors

De Sturler, Eric
Gao, David
Illiescu, Traian
Shockley, James
Williams, Michael

Assistant Professors

Elgart, Alexander
Gugercin, Serkan
Loehr, Nicholas
Mortveit, Henning
Norton, Anderson
Ryan, Jennifer
Wapperom, Peter
Zietsman, Lizette

Visiting Assistant Professors

Comanici, Adela
Jia, Ning
Pelley, Allen
Ter Horst, Sanne

Instructors

Agud, Diane
Anderson, Susan
Bourdon, Terri
Cothorn, Marlene
Hagen, Susan
Hanks, Lucy
Hart, Heath
Hodges, Charles
Holub, Lorraine
Kohler, Abigail
McQuain, Margaret
Peters, Tom
Powers, Linda
Reynolds, Bernice
Schmale, Jessica
Shugart, Eileen
Smith, Deborah
Stephens, Catherine

Post-Doc/Research Associate

Afkhami, Shahriar

GRANTS

SLIMANE ADJERID

Discontinuous Galerkin Methods for partial Differential Equations, NSF, Principal investigator, \$110K, status: continuing, 2007-08.

Discontinuous Immersed Finite Element methods for Interface Problems, NSF, Co-PI, PI: Tao Lin, National Science Foundation, \$150K, status: new

CHRISTOPHER BEATTIE

NSF DMS-0505971, Applied Mathematics, Model Reduction with Rational Krylov Methods, Christopher Beattie and Serkan Gugercin, \$210,875.00, (June 1, 2005-May 31, 2008, \$210,766.

NSF DMS 0513542, Computational Mathematics, Computation and Analysis of Reduced-order Models for Distributed Parameter Systems, Christopher Beattie, Jeff Borggaard, Serkan Gugercin and Traian Iliescu, \$431,342 (June 15, 2005-June 14, 2008). Cont.

AFOSR-FA9550-05-1-0449, Mathematics and Space Sciences
High Performance Parallel Algorithms for Improved Reduced-order Modeling, Christopher Beattie, Jeff Borggaard, Serkan Gugercin and Traian Iliescu
(August 15, 2005- November 30, 2007. \$502,245.

Air Force Office of Scientific Research (Dynamics and Control) for conference support: Eighteenth International Symposium on the Mathematical Theory of Networks and Systems (\$30,000)

JEFF BORGGGAARD

Computation and Analysis of Reduced-order Models for Distributed Parameter Systems, Principal Investigator with Christopher Beattie, Serkan Gugercin and Traian Iliescu), National Science Foundation, Grant DMS-0513542, 2005-2008 (\$431, 342.00).

High Performance Parallel Algorithms for Improved Reduced-Order Modeling, Principal Investigator (Christopher Beattie, Serkan Gugercin and Traian Iliescu), Air Force Office of Scientific Research, Grant FA9550-05-1-0449, 2005-2007 (\$542,822.00)

Reduced –Order Modeling for Optimization and Control of Complex Flows. Co-PI (with T. Iliescu), Air Force Office of Scientific Research, 2007-2010, \$391,021.

REU Site: Modeling and Simulation of Biological Networks, Senior personnel (R. Laubenbacher, J. Burns, S. Faulkner, and L. Zietsman co-PI, 2008-2011, \$269,193.

JOHN BURNS

2004- Present: “Mathematical and Computational Tools for the Analysis, Design And Optimization of Very Large Membrane Structures with Advanced Material Models”, Principal Investigator (with E.M. Cliff, T.L. Herdman and D.J. Inman), NASA/DARPA Grant. AFOSR Grant (\$1,870,500)

2007 – Present: Computational Methods of Identification, Optimization and Control of PDE Systems, Principal Investigator with E. M. Cliff and L. Zietsman, AFOSR (\$699,117).

2007- Present: REU Grant on Modeling and Simulation of Biological Networks, Principal Investigator with S. Faulkner, R. Laubenbacher and L. Zietsman NSF (\$269,193).

ERIC DE STURLER

Collaborative Research: CMG: Quantum Monte Carlo Calculation of Deep Earth Materials, NSF EAR 05-30643, Sub award from University of Illinois (2005-05100-01), \$130,618.00, 12/25/2005 – 08/31/2009, PI (this is now VT Part of original grant under 2)

Collaborative Research: CMG: Quantum Monte Carlo Calculations of Deep Earth Materials, NSF EAR 05-30643, \$320,000.00, 8/15/2005 – 8/31/2009, CoPI (received at UIUC).

Collaborative Research: Unifying mechanistic and dynamic mathematical models Of stomatal behavior and photosynthesis, IOB-0417126, \$395,155.00, 09/01/2004 – 08/31/2007, CoPI (received at UIUC), supporting postdoc at UIUC (Xinguang Zhu)

Materials Computation Center, NSF, \$3,960,000, 10/2003-09/2008, CoPI and member Of MCC Advisory Committee, (received at UIUC), supporting student at UIUC.

ALEXANDER ELGART

Transport in disordered media, 652,000 Israeli shekels (\$180,000) Israel Science Foundation.

Structured random matrix model for complex dynamics, other PI's: Cohen, Kottos, (\$106,000) United States – Israel Binational Science Foundation.

DAVID GAO

NSF: Division of Computer & Information Science & Engineering, Primal-Dual Method and Algorithm for Large Scale Computation with Applications in Engineering Mechanics, CCF-051768, 2005-2008: (\$180,000), (PI).

EDWARD GREEN

National Security Agency Research Grant #H98230-07-1-0057, 12/06-12/08 (\$65,838).

SERKAN GUGERCIN

NSF Division of Mathematical Sciences, Model Reduction with Rational Krylov Methods, PI's Chris Beattie, Serkan Gugercin. Extension amount in May 2007: (\$71,766), Total Amount \$210,766.

NSF-Division of Mathematical Sciences, Computation and Analysis of Reduced-Order Models for Distributed, Parameter Systems, PI's Jeff Borggaard, Chris Beattie, Serkan Gugercin, Traian Iliescu, (\$431,342).

Air Force Office of Scientific Research Grant, High Performance Parallel Algorithms for Improved Reduced-Order Modeling. PI's Jeff Borggaard, Chris Beattie, Serkan Gugercin, Traian Iliescu, (\$502,245).

NSF – Division of Mathematical Sciences, Career: Reduced-order Modeling and Controller Design for Large-scale Dynamical Systems via Rational Krylov Methods, May 1, 2007 – April 30, 2012, PI: Serkan Gugercin, (\$400,000).

GEORGE HAGEDORN

National Science Foundation Grant DMS-0303586. Rigorous Studies in Quantum Mechanics. Award Amount \$162,493.00. 05/15/03-04/30/07.

National Science Foundation Grant DMS – 0600944. Mathematical Studies In Quantum Mechanics. Award Amount \$243,770.00. 07/15/06-04/30/09.

SUSAN HAGEN

Texas Instruments College Short Course (Fall 2007) Proposal funded through Texas Instruments provides a weekend workshop for Preservice Mathematics teachers with each participant receiving a TI-84 plus calculator upon completion.

Virginia's Middle mathematics Project, (2007-08) Mathematics & Science Partnership Grant. Partner with University of Virginia, James Madison University. Award :(\$88,155)

Principal Investigator of sub award in partnership grant to offer a professional development program for 6th and 7th grade mathematics and special education Teachers. Grant also provides for the placement of a math specialist in two Roanoke City Schools.

The Mathematics Preparation of Preservice Secondary Teachers. "CEUT grant (Summer 2006-07) Gwen Lloyd & Susan Hagen. (\$5,000.00) Co-PI of a Teaching and Learning Grant from the Virginia Tech Center for Excellence in Undergraduate Teaching. Grant supports the integration of a technology course and mathematics course For preservice secondary teachers.

PETER HASKELL

Principal investigator (with Dan Farkas) on NSA grant H98230-06-1-0086, Undergraduate research workshop, April 7, 2007 – April 6, 2007, \$30,000

TRAIAN ILIESCU

"CMG Collaborative Research: A New Modeling Framework for Nonhydrostatic Simulations of Small Scale Oceanic Processes," (PI: T. Iliescu, CoPIs: J. Duan, P. Fischer and T. Ozgokmen), National Science Foundation Grant OCE-0620464, September 15, 2006 – September 14, 2009. \$147,861

"Computation and Analysis of Reduced-Order Models for Distributed Parameter Systems," (PI: J. Borggaard, Co-PIs: C. Beattie, S. Gugercin and T. Iliescu), National Science Foundation, Grant DMS-0513542, June 15, 2005 – June 14, 2008, \$431,342.

"High Performance Parallel Algorithms for Improved Reduced-Order Modeling," (PI: J. Borggaard, Co-PIs: C. Beattie, S. Gugercin and T. Iliescu), Air Force Office of Scientific Research, Grant FA9550-05-1-0449, August 14, 2008 – \$542,822.

TAO LIN

Highly Multiplexed Optical Fiber Sensing Networks for Infrastructure Monitoring, NSF, Sept. 2004-Aug. 2008, \$500,000.00 (Co-PI with A. Wang, G. Pickrell, L. Dasilva, K. Cooper of ECE)

Discontinuous Immersed Finite Element Methods for Interface Problems, NSF, July, 2007-June, 2010, \$153,000, (pi: T. Lin, Co-PI: S. Adjerid

GWENDOLYN M. LLOYD

National Science Foundation DUE-CCLI Program, PI: Gwen Lloyd, (CoPI with Vanessa Pitts-Bannister) 2006-2009, \$100,000.

Virginia Department of Education (PI Jay Wilkins), (CoPI: Gwen Lloyd, 2005-2007, \$74,000.00

CONT:

National Science Foundation – Centers for Teaching and Learning, Research Associate: Gwen Lloyd, (PIs: Located Michigan State, W. Michigan and Missouri), 2005-2008, \$4000 per year.

National Science Foundation ESI TPC Program, PI: Beth Herbel Eisenman, Iowa State, (CoPI, Gwen Lloyd) 2006-2007, \$50,000.00. One year no-cost extension on this NSF Grant.

CEUT – Teaching & Learning Grant 2006-07 (\$2000). An additional (\$3000.00) Granted for 2007-2008. The Mathematical Preparation of Preservice Secondary Teachers PI: G. Lloyd; Co-PI S. Hagen

NICHOLAS LOEHR

Symmetric Functions, Macdonald Polynomials, Quantum Combinatorics, and Nabla. NSA Young Investigator Grant, (\$30,000), 9/1/2007-8/31//2009, PI: Loehr.

HENNING MORTVEIT

Senior personnel on the recently funded REU project titled “Modeling and Simulation of Biological Networks”. Principal investigators are R. Laubenbacher, J. Burns, S. Faulkner, and L. Zietsman. Other senior personnel are J. Borggaard, A. Jarrah and O. Pierrakos. (\$269,193).

ANDERSON NORTON

Co-Principal Investigator for a \$500,000 Robert Noyce Scholarship Grant from NSF, Providing scholarships in order to recruit future secondary math teachers for high-need Schools in Indiana awarded for 2006-2009.

Principal Investigator for a \$40,000 Profit Grant supporting a two-year Fractions Recovery Triads project, a professional development study for in-service elementary school teachers using teaching experiments, awarded for 2005-2007.

Co-Principal Investigator for \$1,500,000 DR-K12 Grant from NSF, studying restructuring of early field experiences for elementary preservice teachers, awarded 2007-2012.

WAYNE PATTY

National Science Foundation Grant (Systemic Reform of Mathematics K-5 for Virginia), April 1, 2000 – March 31, 2007, PI: Wayne Patty, \$2,894,459.00.

This is a local Systemic Change (LSC) grant, and the purpose is to provide Professional development for K-5 teachers in the two participating school divisions in order to implement NCTM – Standards – based, research – based curricula. The above dates include two one-year, no cost extensions, one of which we received in 2005

Submitted a request and justification to NSF for a one-year no cost extension to the NSF Local Systemic Change grant. This request was approved, and the new ending date is 03/31/08.

MICHAEL RENARDY

NSF-DMS 0405810

DMS 0707727, National Science Foundation (\$124,795) 8/1/07-7/31/10.

YURIKO RENARDY

National Science Foundation, Mathematical Sciences Priority Area of the Division of Chemical and Transport Systems (CTS) and the Division of Mathematical Sciences (DMS). DMS-0456086. Title: The development and implementation of algorithms to investigate drop fragmentation under shear for viscoelastic liquids with surfactant. Principal Investigator: Yuriko Renardy. \$200,000.00, 6/15/2005 – 05/31/2008.

National Center for Supercomputing Applications, High Performance Computing Environment IBM P690, 10,000 SUs, CTS060022, 1/17/06-1/31/07. Title: The investigation of viscoelastic stresses in simulation of drop deformation under shear. PI

2003-2008: National Institute of Health Grant, 1R25GM066534-01A1 (PI Edward Smith, Department of Animal and Poultry Science) Virginia Tech Post-baccalaureate Research and Educational Program (PREP)

NCSA (National Center for Supercomputing Applications, University of Illinois at Urbana- Champaign), grant TG-CTS060013N for 30,000 Service Units, 6/7/2007-6/30/2008. Title: The influence of viscoelasticity on drop deformation in shear flow: Transient deformation, orientation and break-up. PI

JENNIFER RYAN

PI: Novel Computational Approaches: Discontinuous Galerkin-Multi-Resolution Analysis, Advance VT Research Seed Grant, \$20,000.00, 9/1/06-8/31/07.

MARK SHIMOZONO

Continuing National Science Foundation grant DMS-0401012, 6/04-5/07, \$94,584, Combinatorics in Representation Theory and Algebraic Geometry. Responsibilities for this grant 100%.

National Science Foundation Focused Research Group on “Affine Schubert Calculus: Combinatorial, Geometric, Physical, and Computational Aspects”, DMS-0652641, DMS-0652652, DMS -0652668, DMS-0652648. Total funding is \$999,363. Directly responsible for DMS-0652648 for \$129,565. There are 3 Co-PI’s and an umbrella grant DMS-0652641 for \$671,270 which is co-managed by the PI’s.

SHU-MING SUN

National Science Foundation, Division of Mathematical Science, Grant Number: DMS-0309160. Title: “Three Dimensional Nonlinear Gravity Capillary Water Waves”. \$116,000. Duration: August 1, 2003-July 31, 2007 (extended from July 31, 2006). PI: S.M. Sun – Finished in 2007

PETER WAPPEROM

Simulation of injection molding of thermoplastics reinforced with micro and Nano-particles, 2005-2008, NSF/DOE, \$360,000, D.G. Baird (PI) 50% and P. Wapperom, 50% in 2007, \$120,000 have been approved for year 3.

LIZETTE ZIETSMAN

Computational Methods for Identification Optimization & Control of PDE Systems, Air Force Office of Scientific Research, 2007 – Present, (\$448,083) PI’s: J. Burns, E. Cliff, L. Zietsman.

Research Experiences for Undergraduates: Modeling and Simulation of Biological Networks, NSF, 2007- Present, (\$269,193), PI’s: J. Burns, S. Faulkner, R. Laubenbacher, L. Zietsman.

DISTINGUISHED PROFESSIONAL SERVICE

JOSEPH BALL

Associate Editor for Proceedings of the American Mathematical Society: Handled 12 papers in 2007; as of February 1, 2007. No longer on the Editorial Board of PAMS.

Associate Editor for Journal of Mathematical Analysis and Applications: Handled 28 papers in 2007.

Associate Editor for Integral Equations and Operator Theory: Handles 15 papers in 2007.

Associate Editor for the new journal Complex Analysis and Operator Theory. Handled 1 paper in 2007.

ERZA BROWN

Associate Editor for the American Mathematical Monthly (Problems and Solutions Department – refereed and compiled solutions for ten problems).

Editorial Board, INTEGERS: The Electronic Journal of Combinatorial Number Theory.

Editorial Board, Math Horizons

JOHN BURNS

Associate Editor – Applied and Computational Control, Signals and Circuits 1996-present.

ERIC DE STURLER

Associate Editor SIAM Journal on Numerical Analysis.

Editorial Board Applied Numerical Mathematics.

Editorial Board International Journal on Computational Science and Engineering,

Editorial Board Open Applied Mathematics Journal.

DAVID GAO

Co-Editor-in-Chief for book series on Modern Mechanics and Mathematics published By Chapman & Hall/CRC.

Co-Editor-in-Chief for book series of Advances in Mechanics and Mathematics Published by Springer.

Associate Editor for Journal of Global Optimization. Springer.

Editor for Discrete and Continuous Dynamical Systems, Series B. An International Journal Bridging Mathematics and Sciences. AIMS Press.

Associate Editor for Journal of Industrial and Management Optimization.

Associate Editor for Optimization letters, Springer.

Associate Editor of Electronic Journal of Mathematics and Technology.

BILL GREENBERG

Editor Board: Journal of Transport Theory and Statistical Physics.

Editor Board: International Journal of Evolution Equations.

TERRY HERDMAN

Journal of Integral Equations and Applications.

TAO LIN

Served as a regional editor for the International Journal of Information & System Sciences.

GWENDOLYN LLOYD

Member of Editorial Panel (2005-2008) of the Journal for Research in Mathematics Education.

Guest Editor, 4 manuscripts, Journal for Research in Mathematics Education (2007)

Co-Editor, Perspectives on Teachers' Use of Mathematics Curriculum Materials (24-chapter edited research volume with B. Herbel-Eisenman and J. Remillard)

MICHAEL RENARDY

Co-Editor, Qualitative Theory of Differential Equations
And Applications.

Editor, Zeitschrift fuer angewandte Mathematik and Physik.

Co-Editor, Mathematical Methods in the Applied Sciences.

Co. Editor, Advances in Differential Equations.

Co-Editor, Communications in Applied Analysis.

Co-Editor, International Journal of Differential Equations and Applications.

Co-Editor SIAM Problems and Solutions (electronic publication).

Co-Editor, International Journal of Pure and Applied Mathematics.

Co-Editor, Zeitschrift fuer angewandte Mathematik and Mechanik.

YURIKO RENARDY

Editorial Committee for Journal of Non-Newtonian Fluid Mechanics.

Editorial Committee for IMA Journal of Applied Mathematics.

ROBERT ROGERS

Member of co-editorial board of Journal of Applied Mathematics and Physics
(ZAMP).

DAVID RUSSELL

Associate Editor: Journal of Mathematical Analysis and Applications.

Associate Editor: Discrete and Continuous Dynamical Systems – B.

Honorary Editor, Information and Systems Sciences.

EKKEHARD SACHS

Member of the Editorial Board for Computational Optimization and Application.

Member of the Editorial Board for Optimization, Methods and Software.

Member of the Editorial Board for the Journal of Industrial and Management Optimization.

Member of the Editorial Board of SIAM book series on Advances in Design and Control.

HONORS, AWARDS

JEFF BORGGGAARD

Plenary speaker at the 27th Southwestern-Atlantic Regional Conference on Differential Equations (SEARCDE) held at Murray State University, October 2007.

ASEE Faculty Subcommittee of the College of Science Diversity Committee.

JOHN BURNS

Named Visiting Fellow at United Technology Research Center for 2007-2008.

ALEXANDER ELGART

Won Zvi and Zagava Freidenberg Award for the Advancement of Science and Education, Awarded by Israel Science Foundation.

DAVID GAO

Invited to present one distinguished lecture, one plenary lecture, and two invited lectures at institution and international conferences.

ED GREEN

Invited Hour Plenary talk at joint AMS/MMS meeting Zapatecas Mexico, May 2007.
Invited to give 3 one hour talks at the workshop for the Thirteenth International Conference on the Representations of Algebras, July/August 2008

SERKAN GUGERCIN

National Science Foundation Early CAREER Award in Computational and Applied Mathematics, April 2007.

HEATH HART

Mathematics Instructor of the Year, 2007

TRAIAN ILIESCU

Plenary speaker at Sandia CSRI Workshop on Mathematical Methods for Verification and Validation, Hyatt Regency Tamaya Resort, August 14-16, 2007.
Our paper in Ocean modeling was the most downloaded paper three months in a row.

MICHAEL RENARDY

Scholar of the Week, July, 23-27, 2007.

EILEEN SHUGART

William E. Wine Award for a history of university teaching excellence, April 2007.
Mathematics Association of America VT Student Chapter Professor of the Year Award,
May 2007.

LIZETTE ZIETSMAN

Faculty Fellow for the 2007 Air Force Summer Faculty Fellowship Program (SFFP)
At the Air Force Research Laboratories (AFRL) at Wright Patterson Air Force Base, OH.

DEGREES AWARDED 2007

Ackermann, Robert J. – Dual – Spring 2007
Acuesta, Leonard – Spring 2007
Anderson, Sarah – Spring 2007
Arnaudin, David – Summer II 2007
Avery, Michael – Dual - Spring 2007
Bawiec, Lucy – Spring 2007
Bostic, Laura – Spring 2007
Brubaker, Jacob – Spring 2007
Catoire, Matthew – Dual – Fall 2007
Cheatham, David – Spring 2007
Chi, Jonathan – Spring 2007
Choi, Seung-Kyun – Dual - Spring 2007
Cleary Maura – Summer II 2007
Collins, David – Spring 2007
Craig, Cassandra – Spring 2007
Cutter, Jennifer - Spring 2007
Davis, Justin – Spring 2007
Dawson, Jacob – Fall 2007
Dell-Isola, Andrew – Spring 2007
Emerson, Ralph – Spring 2007
Fesharaski, Farshad – Spring 2007
Finch, Andrea – Fall 2007
Flagg, Garret – Spring 2007
Flaks, Joseph – Spring 2007
Gamble, Milan – Spring 2007
Harnish, Melissa – Spring 2007
Hickman, Miranda – Spring 2007
Hobbs, Nicholas – Spring 2007
Holdren, Emily – Summer II 2007
Hudson, Bobby – Spring 2007
Jo, Lydia – Spring 2007
Johnson, Alexander L. – Fall 2007
Kang, Sungkwon – Spring 2007
Kania, Cris – Dual – Spring 2007
Knuteson, Melissa – Spring 2007
Kole, Shawn – Spring 2007
Ladd, James – Dual – Spring 2007
Lindsey, Samuel – Fall 2007
Luck, Christopher – Dual – Spring 2007
Luhrman, Christopher – Spring 2007
Ly, Vinh – Dual – Spring 2007
Lyons , Lori – Spring 2007
Manzel, Sara – Spring 2007

Marchio, Nicholas – Spring 2007
Mattox, Wade – Spring 2007
McNeil, Carrie – Fall 2007
McQuade, Sean – Spring 2007
Meister, Jennifer – Spring 2007
Menick, Timothy – Summer I, 2007
Meyer, Mark C. – Spring 2007
Ortiz, Matthew – Spring 2007
Owens, Clifford – Dual – Summer I 2007
Pace, Christina – Fall 2007
Paixao, Joao – Spring 2007
Peery, Katherine – Spring 2007
Petkewicz, Zachary – Summer II 2007
Pohrivchak, Michael – Spring 2007
Puranen, Arvid – Summer I, 2007
Pouzou, Christoher – Spring 2007
Prior, Rebecca – Spring 2007
Robl, Lauren – Spring 2007
Rogers, Jeremiah – Spring 2007
Roth, Eric – Dual – Spring 2007
Settle, Sean – Dual – Fall 2007
Shapiro, Bradley – Fall 2007
Shea, Mason – Spring 2007
Shields, Devon – Spring 2007
Shiner, Susannah – Spring 2007
Siddiqu, Ali – Double Major – No Degree – Fall 2007
Studd Ashley – Spring 2007
Tompkins, Christopher R. III – Spring 2007
Traub, Dietrich – Fall 2007
Ucciferri, David – Spring 2007
Vangeloff, Michael - Spring 2007
Vislocky, James – Spring 2007
Vuiller, Matthew – Summer I 2007
Walsh, Theresa – Summer I 2007
Washburn, Laura – Spring 2007
Wlkerson, Mary – Spring 2007
Wilkinson, John – Dual - Spring 2007
Wilmouth, Ashley – Spring 2007
Wukitsch, Thomas – Spring 2007
Wyatt, Sarah – Spring 2007
Xu, Yanmin – Fall 2007
Yavullla, Michelle – Spring 2007

X.

**Undergraduate Semester Course Offerings
Fall '07 and Spring '08**

<u>Course Number</u>	<u>Title</u>	<u>Number of Sections</u>
1015	Elementary Calculus with Trig. I	13
1015*	Elementary Calculus with Trig. I	3
1015**	Elementary Calculus with Trig. I	2
1016	Elementary Calculus with Trig. I	16
1016*	Elementary Calculus with Trig. I	3
1016**	Elementary Calculus with Trig. I	2
1114	Elementary Linear Algebra	19
1114H	Elementary Linear Algebra	3
1114**	Elementary Linear Algebra	2
1205	Calculus	35
1206	Calculus	36
1224	Vector Geometry	50
1224H	Vector Geometry	2
1525	Elementary Calculus with Matrices	9
1526	Elementary Calculus with Matrices	10
1535	Geometry & Math of Design	3
1536	Geometry & Math of Design	3
1614	Number and Computing for Teachers	1
1624	Geometry and Computing for Teachers	1
2015	Elementary Calculus with Trig. II	20
2016	Elementary Calculus with Trig. II	2
2214	Intro Differential Equations	32
2214H	Intro Differential Equations	2
2224	Multivariable Calculus	37
2224H	Multivariable Calculus	1
2534	Introduction to Discrete Mathematics	2
2644	Mathematical Tutoring	1
3034	Introduction to Proofs	6
3124	Modern Algebra	4
3134	Applied Combinatorics & Graph Theory	6
3144	Linear Algebra I	4
3214	Vector Calculus	6
3224	Advanced Calculus	5
4044	History of Mathematics	1
4124	Introduction to Abstract Algebra	2
4134	Number Theory	1
4164	Advanced Discrete Mathematics	1
4175	Cryptography	1
4176	Cryptography	1
4225	Elementary Real Analysis	2

4226	Elementary Real Analysis	2
4234	Elementary Complex Analysis	1
4254	Chaos and Dynamical Systems	1
4334	College Geometry	2
4404***	Applied Numerical Methods	1
4414****	Issues in Scientific Computing	1
4425	Fourier Series PDE	1
4426	Fourier Series PDE	1
4445	Introduction to Numerical Analysis	2
4446	Introduction to Numerical Analysis	2
4564	Operational Methods for Engineers	5
4574	Vector and Complex Analysis for Engrs.	4
4625	TS: Math for Secondary Teachers	1
4626	TS: Math for Secondary Teachers	1
4644	TS: Secondary Math w/Tech	1
4654	Capstone Thesis and Seminar	1
4664	TS: Senior Math Education Seminar	1
4984**	SS: Applied Complex Variables	1

*VTASP Sections

**On-Line Course

*** Taught by AOE

****Taught by CS

XI.

Graduate Course Offerings
Fall 2007 and Spring 2008

<u>Course Number</u>	<u>Title</u>	<u>Number of Sections</u>
5114	Specialized Topics in Algebra	1
5125	Abstract Algebra	1
5126	Abstract Algebra	1
5225	Real Analysis	1
5226	Real Analysis	1
5235	Complex Analysis	1
5236	Complex Analysis	1
5245	Differential Equations	1
5246	Differential Equations	1
5344	Topology & Geometry	1
5425	Ap Par Diff Equations	1
5426	Ap Par Diff Equations	1
5454	Graph Theory	1
5465	Numerical Analysis	1
5466	Numerical Analysis	1
5474	Finite Difference Mathematics	1
5484	Finite Element Methods	1
5485	Numerical Analysis & Software	1
5486	Numerical Analysis & Software	1
5515	Model & Simulation of Bio Systems	1
5524	Matrix Theory	1
5545	Calculus of Variations	1
5546	Calculus of Variations	1
5725	Math-Finance Modeling	1
5726	Math-Finance Modeling	1
6125	TS: Homological Algebra	1
6126	TS: Homological Algebra	1
6255	Functional Analysis	1
6256	Functional Analysis	1
6324	TS: Differential Geometry	1
6425	TS: Sensitivity Analysis	1

Enrollment Summary, Fall 2007 – Spring 2008

	Number of Sections	Enrollment	Average Section Size
*Courses below level of calculus	50	4,330	86.6
**First year calculus courses	117	5,755	49.2
Other undergraduate courses	208	8,305	39.9
Graduate courses	31	376	12.1
Total	406	18,766	46.2

Number of Undergraduate Majors: 329

Number of Graduate Students: 67

*courses included: 1015, 1114, 1525

**courses included: 1016, 1205, 1224, 1526

GRADUATE STUDENT

DEGREE STATUS

MASTER OF SCIENCE

Grant Boquet

Rose Feor

Moises Guerra Huaman

Wade Mattox

Edgar Saenz-Maldonado

Sutton, Daniel

DOCTOR OF PHILOSOPHY

Mahboub Baccouch

Helmi Temimi