

ANNUAL REPORT

2006

Annual Report
Mathematics Department
2006

Part 1
Department Head's Summary

- **Learning**
 - Ten Undergraduate Research projects were completed in 2006
 - An NSA sponsored REU was organized in Summer 06.
 - Our Math Ed option continues to graduate on average 20 students licensed to teach in the Commonwealth.
 - B.S. degrees were conferred on 81 students. Our average number of mathematics majors is consistently over 73. This puts us in the top 15 in the country.
 - A test engine allowing asynchronous testing is in place in the Math Emporium has been put in place. Over half a million tests were served at the Math Emporium in 2005.
 - There were 53 graduate students in GTA positions. There were 3 GRA's.
 - US News ranks our graduate program in Applied Mathematics 33rd in the country.
 - In 2006-7 we conferred 10 M.S. degrees and 3 Ph.D. degrees
 - Our graduate student connections to Peru, Tunisia and Algeria continue to grow.
 - MOU's with the Universities of Trier and Karlsruhe in Germany have resulted in four German students receiving their MS in Math at VT.

- **Discovery**
 - The grant expenditures of the Math Department and ICAM have topped \$1M in calendar year 2006.
 - Over 40 grants are in progress.
 - Over 40 faculty serve as editors or associate editors.
 - Over the last two years, a strong computational group in the Math Department consisting of Beattie and Borggaard and joined by new comers Iliescu and Gugercin has been awarded 3 grants.
 - The math department has lowered the teaching loads of research active faculty to 2-1. Since applying or possessing grants is a necessary condition for consideration, our grant submissions are up significantly. Twenty-Five professorial faculty have submitted grant proposals in 2006

- **Engagement**
 - An MOU was developed between Springer-Verlag, InuTech and Icubed (a company owned by department member James Turner) resulted in two students interning during Summer 2006 at InuTech headquarters in Nurnberg, Germany

- Traian Iliescu attended the International Faculty Development Institute in Riva San Vitale, Switzerland.
 - Eric de Sturler was chosen to participate in the 07 International Faculty Development Institute in Riva San Vitale, Switzerland.
 - Sue Hagen is working with middle school teachers under a program funded by the Virginia Department of Education. She is also working with VT STARRS out of Ed McPherson's office
 - We sponsor the VT regional Math contest involving 40 colleges/university and 200 students.
 - We offered our annual Women's Career Day at the Math Emporium involving 20 regional middle schools, 200 girls and a panel of 5 alumnae.
 - We are institutional members of the new Redesign Alliance
- **Honors and Awards**
 - Ezra Bud Brown won the George Polya Award from the MAA.
 - Gail Letzter won a College Teaching Certificate of Excellence.
 - Eileen Shugart was named VT MAA professor of the year.
- **Future Directions**
 - The department received the external review report. As a result of the review, there will be discussions in Summer 2007 on completely reorganizing the department.
 - A review of the Math Emporium will take place during Summer 2007

Part 2

Academic Accomplishments

Learning

We graduated 79 majors in 2006 with over 20 graduated in the Math Ed option. We have been actively trying to increase undergraduate research projects. As predicted, we raised the number of undergraduate research projects from 6 last year to 10. The personnel committee has made it clear that such projects raise a faculty's evaluation and more faculty are becoming involved.

We continue to require our Math Ed students to take a one credit "Tutoring" class where they must perform some form of tutoring. Methodologies and experiences are discussed in class.

There are 4 degree options each with a course advisor for each of the four years and an undergraduate research coordinator who advises students in picking a mentor.

Dan Farkas and Peter Haskell won an NSA grant to sponsor an REU for summer 2006. Seventeen students from regional universities attended.

We were given a \$114,000 grant by the Provost's office to put Math 1535-36 online. These courses are exclusively for CAUS students. The material is sufficiently non-standard that we could no longer guarantee a teacher each year.

Five of our faculty have completely non traditional teaching roles. Hodges manages the Math Emporium. Peters and Reynolds supervise there. Quinn and Schmale work solely on development of online courses and testing.

We graduated 10 M.S. and 3 Ph.D. students in AY 06-07. We are seeing a growth in the number of our Ph.D. students due to our active recruitment of foreign students. We have a pipeline to Peru and to Tunisia and Algeria. We have a GTA coordinator, Eileen Shugart, who works on scheduling and mentoring of grad students in their role as teachers. She is a past recipient of an AMS Preparing Future Faculty grant and has published a booklet on being a Math GTA.

As a result of the International Faculty Development Workshop at CESA in Switzerland John Rossi initiated MOU's with the University of Trier and the University of Karlsruhe in Germany which were completed in 2006. The agreements involve faculty and student exchanges. Two graduate students from Trier came to VT in Fall 2005 and completed their M.S. degree in Spring 2006. Two students from Karlsruhe completed their M.S. degrees in Fall 2006

Traian Iliescu attended the International FDI in Riva in 2006 and has made some contacts with universities in Italy. Eric de Sturler will be attending IFDI in 2007.

Discovery

Total Expenditures for Math and ICAM for 2006 was \$1,509,331. This includes over 40 external grants. We introduced 2-1 teaching loads in 2005. A pre-requisite is current or submitted grants. This has substantially increased the number of faculty who have applied for grants. Twenty-eight faculty requested teaching load reductions this year.

In 2006 the Faculty has published over 100 articles in refereed journals and given over 150 invited lectures. We have an active colloquium series which bring in about 25 outside speakers brought throughout the year.

We began searching in the core areas of Algebra and Analysis and also in Math Ed in 2006. (The searches were successful and 3 new faculty will join us in Fall 07.)

Three postdoctoral associates were appointed in 2006.

Engagement

An MOU was developed between Springer-Verlag, InuTech and Icubed (a company owned by department member James Turner). This will provide opportunities for our students to study and intern abroad. This led to a Web based educational module in Computational Science which was used in the Graduate School's GEDI program. Two students did internships with InuTech in Summer 2006.

K-12 teacher professional development is run by Wayne Patty. He has received a six month extension on his large grant.

Susan Hagen is involved with Middle School Teachers via the Highly Qualified Program in conjunction with JMU, VCU, NSU, UVA, UMW. She teaches an online course *Algebra for Middle School Teachers*.

Hagen also teaches a summer course with VT-Stars, a preparatory program for minority high school students. We sponsor the VT regional Math contest involving 40 colleges/university and 200 students.

We offered our annual Women's Career Day at the Math Emporium involving 20 regional middle schools, 200 girls and a panel of 5 alumnae.

During Math Awareness Month, we sponsor a poster contest for Montgomery and Giles K-6 students. The winners and their parents and teachers are invited to a reception in our Commons Room.

Honors and Awards

Bud Brown has again won the George Polya award from the Mathematical Association of America, this time for his article, "Phoebe Floats!," which appeared in the March 2005 issue of the *College Mathematics Journal*. The award was presented at MAA's summer MathFest, held August 10-12, 2006 in Knoxville, TN.

Gail Letzter won a COS Certificate for Teaching Excellence and Eileen Shugart was named Professor of the year by the VT chapter of the MAA.

Diversity

Camille Daniel and Kalota Stewart, two African-American females, are in the last stages of their Ph.D degrees

Future Plans

As a result of the report of the external review board, the department has been considering its future directions. A committee has been formed to discuss an autonomous Division of Computational Mathematics within the department. A committee of 6 has been formed to discuss this issue throughout the summer of 2007.

A review of the Math Emporium led by Neil Hauenstein from Psychology and his student Emilee Tison will be carried out in Summer 2007.

Part 3

FACULTY

Hatcher Professor

Burns, John

Alumni Distinguished Professor

Brown, Erza

Professors

Adjerid, Slimane

Ball, Joseph

Beattie, Christopher

Borggaard, Jeffery

Day, Martin

Floyd, William

Green, Edward

Greenberg, William

Hagedorn, George

Haskell, Peter

Herdman, Terry

Holob, James

Kim, Jong Uhn

Klaus, Martin

Kohler, Werner

Laubenbacher, Reinhard

Lin, Tao

Linnell, Peter

Parry, Charles

Patty, C. Wayne

Prather, Carl

Quinn, Frank

Renardy, Michale

Renardy, Yuriko

Rogers, Robert

Rossi, John

Russell, David

Sachs, Ekkehard

Shaw, John
Shimozono, Mark
Snider, Robert
Sun, Shu Ming
Turner, James C
Wheeler, Robert

Associate Professors

De Sturler, Eric
Elder, Griffith
Gao, David
Lloyd, Gwendolyn
Shockley, James
Washenberger, James
Williams, Michael

Assistant Professors

Comanici, Adela
Gugercin, Serkan
Illiescu, Traian
Mortveit, Henning
Ryan, Jennifer
Wapperom, Peter
Zietsman, Lizette

Instructors

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

Post-Doc/Reach Associate

Xiangdong, Xie
Comanici, Adela

GRANTS

SLIMANE ADJERID

Discontinuous Galerkin Methods for Partial Differential Equations, NSF,
Principal investigator, \$110K, period: 2005-2008, status: Current

M.Sc. Program in Computational Mechanics at PST and Impacts on Development in Tunisia, State Department, \$187,181.00, status: expired on August 31, 2006.

SUSAN ANDERSON

Dr. Rossi (PI) and I (Co-PI) submitted a grant proposal for our 2006 “Women In Mathematics: Career Day at Virginia Tech” to the National Security Agency And were awarded \$2,800.00. Career Day is described under IV.B.(i).

JOE BALL

US-Israel Binational Science Foundation grant (no. 2002414): “Multidimensional systems, multivariable operator model theory, scattering and function theory, Scattering and function theory” (joint with D. Alpay, C.-Sadosky and V. Vinnikov) November 2003-November 2007, \$80,000 (\$20,000 per year)---used for Israelis to travel to the US and Americans to travel to Israel; application for renewal submitted.

CRDF (US Civilian Research & Development Foundation) grant (with Damir Arov, Odessa, Ukraine), “Passive Linear Systems and Related Topics in Operator Theory, Evolution Equations, Analytic Functions, Scattering, Control, Networks, and Stochastic Processes”, \$67,820.00 for two years, submitted.

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, 2007).

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, \$431,342.00. (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
\$325,723.00. (August 15, 2005-August 14, 2008).

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)

Computational Methods for Design, Control and Optimization of Micro Air Vehicles, Senior Investigator (John Burns, E. Cliff, Traian Iliescu), AFOSR, Grant F49620-02-C-0048, 2003-2006 (\$600,000.00), extended.

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 (\$1,766,777.00)

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 (Shun Wang)

WILLIAM FLOYD

Principal investigator on NSF Grant DMS-427236, 15 July 2002- 30 June 2006.
The total award is \$89,016.00.

DAVID GAO

Gao, D.Y. (PI) Primal-Dual Method and Algorithm for large Scale Computation with Applications in Engineering Mechanics, National Science Foundation, Primal-Dual Method and Algorithm for large Scale Computation with Applications in Engineering Mechanics, CCF-0514768, 2005-2008: \$180,000.00.

EDWARD GREEN

National Security Agency Research Grant #H98230-05-1-0039, 12/04-12/06 \$59,259.00
National Security Agency Research Grant #H98230-07-1-0057, 12/06-12/07 (1st year of a two year grant) \$32,234.00

SERKAN GUGERCIN

Air Force Office of Scientific Research Grant FA9550-05-1-0449.
High Performance Parallel Algorithms for Improved Reduced-Order Modeling. Jeff Borggaard, Chris Beattie, Serkan Gugercin and Traian Iliescu

December 1, 2006- November 30, 2007, \$176,522.00 (Extension Amount)
Overall amount from 2004-2007: \$502,245.00.

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

“Preparing Highly Qualified Middle School Mathematics Teachers Across Virginia”

Mathematics & Science Partnership grant (2005-06) Partner with University of Virginia, James Madison University, Norfolk State University, Mary Washington, College and Virginia Commonwealth University. (\$30,062.00)

“Preparing Highly Qualified Middle School Mathematics Teachers Across Virginia.” Mathematics & Science Partnership grant (2006-07) Partner with University of Virginia, James Madison University, Norfolk State University, Mary Washington College and Virginia Commonwealth University. Cont.

“The Mathematics Preparation of Pre-service Secondary Teachers. “CEUT grant (Summer 2006) Gwen Lloyd & Susan Hagen. (\$2,000.00)

PETER HASKELL

Principal investigator (with Dan Farkas) on NSA grant H98230-06-1-0086, Undergraduate research workshop, April 7, 2007 – April 6, 2007, \$30,000.00.

TERRY HERDMAN

Mathematical and Computational Tools for Analysis, Design and Optimization of Very Large Membrane Structures and advanced Material Models, (with J.A. Burns, E.M. Cliff and D. Inman), DARPA SPO and NASA LaRC, 2004-2006, \$2,300,000.00.

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. \$147,861.00.

“Collaborative Research: Three-Dimensional Numerical Investigation of Density Currents, “(PI: J. Duan, Co-PIs: P. Fischer and T. Iliescu), National Science Foundation, Grant DMS-0209309, September 1, 2002-August 31, 2006, \$94,829.00.

“Computational Methods for Design, Control and Optimization of Micro Air Vehicles,” (PI: J. Burns, CoPIs: J. Borggaard, E. Cliff, and T. Iliescu). Air Force Office of Scientific Research, Grant F49620-02-C-0048, 2003-2006, \$150,000.00.

“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, \$107,835.00.

“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 – August 14, 2008, \$135,705.00.

TAO LIN

Modeling Electric Propulsion Plume-Spacecraft Interactions, ERC Inc., \$235,853.00, August 2003-Sept. 2006 (Co-PI with J. Wang of AOE. Cont.

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)

GWENDOLYN M. LLOYD

National Science Foundation Early Career Grant, PI: Gwen Lloyd, 2000-5/2006 \$435,000.00.

National Science Foundation DUE-CCLI Program, PI: Gwen Lloyd, (CoPI with Vanessa Pitts-Bannister) 2006-2009, \$100,000.00.

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, \$4000.00 per year.

National Science Foundation ESI TPC Program, PI: Beth Herbel Eisenman, Iowa State, (CoPI, Gwen Lloyd) 2006-2007, \$50,000.00

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.

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. Cont.

National Center for Supercomputing Applications, High Performance Computing Environment IBM P690, 10,000 SUs, CTS060022, 1/17/06-1/231/07. Title: The investigation of viscoelastic stresses in simulation of drop deformation under Shear.

Presently working on a pre-proposal for an IGERT with D. Baird (Chemical Engineering) And Judy Riffe, (Chemistry)

Assisting with a VT-PREP grant through NIH with Principal Investigator Ed Smith (Poultry and Animal Science)

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.

EKKEHARD W. SACHS

Calibration of Derivative Model, Hypo VereinsBank/Unicredit, Munich, administered by the University of Trier.

Optimization in Assit Liability Management, Frankfurt Trust, Frankfurt, administered by University of Trier.

MARK SHIMOZONO

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

SHU-MING SUN

National Science Foundation, Division of Mathematical Science, Grant Number: DMS-0309160. Title: “Three Dimensional Nonlinear Gravity Capillary Water Waves”. \$116,000.00. Duration: August 1, 2003-July 31, 2007 (extended from July 31, 2006). PI: S.M. Sun

PETER WAPPEROM

Simulation of injection molding of thermoplastics reinforced with micro and

Nano-particles, D.G. Baird (PI) and P. Wapperom, NSF-DMI/DOE, \$360,000.00 for 3 years. Progress is evaluated each year before funding for the next year is approved in 2006. \$140,000.00 has been approved for year 2.

DISTINGUISHED PROFESSIONAL SERVICE

JOSEPH BALL

Associate editor for the journal Integral Equations and Operator Theory: (handled 9 papers as editor during the reporting period).

Associate editor for J. Mathematical Analysis and Applications: (handled 29 papers as editor in 2006).

Associate editor for Proceedings of the American Mathematical Society: (handled 154 papers as editor in 2006).

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, since 2003.

Editorial Board Applied Numerical Mathematics, 2005.

Editorial Board International Journal on Computational Science and Engineering, Since 2004.

Guest Editor for special issue on “Saddle Point Problems: Numerical Solutions and Applications”, Special Volume of Electronic Transactions on Numerical Analysis (ETNA), Volume 22, 2006.

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.

WERNER KOHLER

Served as an associated 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.

Co-Editor of a research volume of the Journal for Research in Mathematics.

MICHAEL RENARDY

Appointed to the editorial board of Qualitative Theory of Differential Equations And Applications during 2006.

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.

EKKEHARD SACHS

Member of the Editorial Board for Mathematical Programming.

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

ELIZABETH BONAOWITZ

Recognized by the Panhellenic Council as one of the most valuable professors
At Virginia Tech.

ERZA BROWN

Mathematical Association of America's George Polya Award for Excellence
In Expository Writing, for the article "Phoebe Floats!" College Mathematics
Journal 36 (2005), 114-122.

Inducted into Pi Mu Epsilon National Mathematics Honor Society, California
Nu Chapter, Sonoma State University.

CHUCK HODGES

Received the 2005-2006 Instructor of the Year Award from the Virginia Tech
Department of Mathematics.

Selected as participant in the 2006 PIDT (Professors of Instructional Design
And Technology) conference as an intern.

GWENDOLYN LLOYD

Nominee, 2006 Alumni Award for Excellence in Graduate Advising.

Nominee, 2006 Louise Hay Award for Contributions to Mathematics Education,
Association of Women in Mathematics.

Biography in Who's Who of American Women (26th Edition, Marquis)

DAVID RUSSELL

Appointed honorary editor of International Journal of Information and System Sciences.

EILEEN SHUGART

Named “Professor of the Year” by the MAA Student Chapter at Virginia Tech, Spring 2006.

DEGREES AWARDED 2006

Adams, Ryan – Dual – Fall 2006
Akinli, Cengiz B. – Dual – Spring 2006
Arnold, Ashley – Spring 2006
Atkinson, Sten – Spring 2006
Badreddine, Mohamed – Summer I 2006
Bailey, Rachel – Spring 2006
Burris, Thomas – Spring 2006
Caracciolo, Jenna – Spring 2006
Carter, Robert – Spring 2006
Clayton, Andrew – Summer II 2006
Cochran, Gregory – Fall 2006
Coslett, Destiny – Spring 2006
Craig, Jeremy – Summer I 2006
Davis, Alexis – Spring 2006
Douglas, James – Spring 2006
Eichhorn, Kristin – Spring 2006
Erickson, David – Dual – Spring 2006
Felps, Martin – Dual – Spring 2006
Fields, Kevin H. – Spring 2006
Fletcher, Michael – Summer I 2006
Foster, Laurie – Fall 2006
Foster, Richard – Dual - Spring 2006
Gantner, Ludwig – Fall 2006
Gibson, David P. – Spring 2006
Gilbertson, James – Dual – Spring 2006
Gong, Xinwei – Dual – Spring 2006
Han, Sang – Fall 2006
Hilios, George – Dual – Spring 2006
Hogan, Kelly – Fall 2006
Horsfall, Christopher D. – Spring 2006
Hughes, William T. – Spring 2006
Johnson, David N. – Spring 2006
Kasiske, Shelley F. – Spring 2006

Koepfel, Meredith – Spring 2006
KrennHrubec, NhuThy – Spring 2006
Kutlu, Matt – Fall 2006
Lahr, Derek – Dual – Spring 2006
Larimer, Scott A.- Spring 2006
Lillard, Parchelle A. – Summer I 2006
Longley, Rachel F. – Spring 2006
Maher, Matthew – Spring 2006
Maher, Teresa – Spring 2006
Massey, Kathryn – Spring 2006
Mathre, Jennifer – Spring 2006
McDermott, Patrick M. – Spring 2006
Mead, Samantha – Spring 2006
Meyer, Zachary – Spring 2006
Miller, Chris – Dual – Spring 2006
Mook, Alisa – Spring 2006
Obrist, Philip – Dual - Spring 2006
Oteiza, Roberto A. – Summer II 2006
Phillips, Ashley – Spring 2006
Poling, Chelsea – Spring 2006
Powell, Taylor – Fall 2006
Rader, Matthew – Fall 2006
Rawls, Stephen W. – Spring 2006
Reynolds, Rebecca – Spring 2006
Riabtsev, Anna – Fall 2006
Ro, Bethel – Fall 2006
Ross, Catherine – Spring 2006
Sandosky, Krista – Summer II 2006
Silver, Matthew – Spring 2006
Skiffington, Laura – Fall 2006
Smith, Duncan - Spring 2006
Snyder, Brittanie – Fall 2006
Soltoff, Stefanie D. – Spring 2006
Spencer, Stephen – Spring 2006
Stephens, Jessie – Spring 2006
Stewart, Jonathan – Spring 2006
Suh, Myungsu – Dual - Fall 2006
Tang, Kai – Dual – Fall 2006
Thompson, Brandon – Spring 2006
Thompson, James – Dual – Spring 2006
Washenberger, Mark – Dual – Spring 2006
West-Fahey, Garrett – Spring 2006
Wheeler, Matthew – Dual – Spring 2006
Whitt, Benjamin – Fall 2006
Wilson, Aaron – Dual – Spring 2006
Yancey, Matthew, P. – Dual – Spring 2006

**Undergraduate Semester Course Offerings
Fall '06 and Spring '07**

<u>Course Number</u>	<u>Title</u>	<u>Number of Sections</u>
1015	Elementary Calculus with Trig. I	11
1015*	Elementary Calculus with Trig. I	3
1015**	Elementary Calculus with Trig. I	2
1016	Elementary Calculus with Trig. I	15
1016*	Elementary Calculus with Trig. I	3
1016**	Elementary Calculus with Trig. I	2
1034	Statistics, A Liberal Arts Approach	2
1114	Elementary Linear Algebra	19
1114H	Elementary Linear Algebra	3
1114**	Elementary Linear Algebra	2
1205	Calculus	34
1206	Calculus	36
1224	Vector Geometry	50
1224H	Vector Geometry	2
1525	Elementary Calculus with Matrices	9
1526	Elementary Calculus with Matrices	8
1535	Geometry & Math of Design	2
1536	Geometry & Math of Design	2
1614	Number and Computing for Teachers	1
1624	Geometry and Computing for Teachers	1
2015	Elementary Calculus with Trig. II	12
2016	Elementary Calculus with Trig. II	2
2214	Intro Differential Equations	31
2214H	Intro Differential Equations	2
2224	Multivariable Calculus	35
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	3
3214	Vector Calculus	6
3224	Advanced Calculus	5
3414***	Numerical Methods	1
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
4245	Intermediate Differential Equations	1
4254	Chaos and Dynamical Systems	1
4324	Elementary Topology	1
4334	College Geometry	2
4404****	Applied Numerical Methods	1
4414	Issues in Scientific Computing	1
4414***	Issues in Scientific Computing	1
4425	Fourier Series PDE	1
4426	Fourier Series PDE	1
4445	Introduction to Numerical Analysis	3
4446	Introduction to Numerical Analysis	2
4564	Operational Methods for Engineers	5
4574	Vector and Complex Analysis for Engrs.	4
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: Math of Computer Simulations	1
4984**	SS: Applied Complex Variables	1

*VTASP Sections

**On-Line Course

***Taught by Computer Science

****Taught by AOE

XI. Graduate Course Offerings
Fall 2006 and Spring 2007

<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
5415	TS: Numerical Optimization	1
5415	TS: Numerical Analysis	1
5415	TS: Intro Spectral Methods	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
5486	Numerical Analysis & Software	1
5495*	Math Methods in Engr.	1
5496*	Math Methods in Engr.	1
5515	Model & Simulation of Bio Systems	1
5516	Model & Simulation of Bio Systems	1
5524	Matrix Theory	1
5545	Calculus of Variations	1
5546	Calculus of Variations	1
6125	TS: Intro Algebraic Geometry	1
6125	TS: Mathematics of Cryptography	1
6225	TS: Several Complex Variables	1
6226	TS: Several Complex Variables	1
6255	Functional Analysis	1
6256	Functional Analysis	1

*Taught by ESM

Enrollment Summary, Fall 2006 - Spring 2007

	Number of Sections	Enrollment	Average Section Size
*Courses below level of calculus	47	4,549	96.79
**First year calculus courses	114	5,761	50.54
Other undergraduate courses	201	8,203	40.81
Graduate courses	34	291	8.56
Total	396	18,804	47.48

Number of Undergraduate Majors: 332

Number of Graduate Students: 53

* courses included: 1015, 1114, 1525

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

GRADUATE STUDENT DEGREE STATUS

MASTER OF SCIENCE

Jessica Bradford
William Carter
Nikolay Churkin
Ousmane Diall
Xiaoming He
Franziska Hinkelmann
Alexis Johnston
Tomairo Murrugarra
Kristine Roinestad
Jan Sterbutzel

DOCTOR OF PHILOSOPHY

Pushkin Kachroo
Adrian Keister
Olgamary Rivera-Marrero