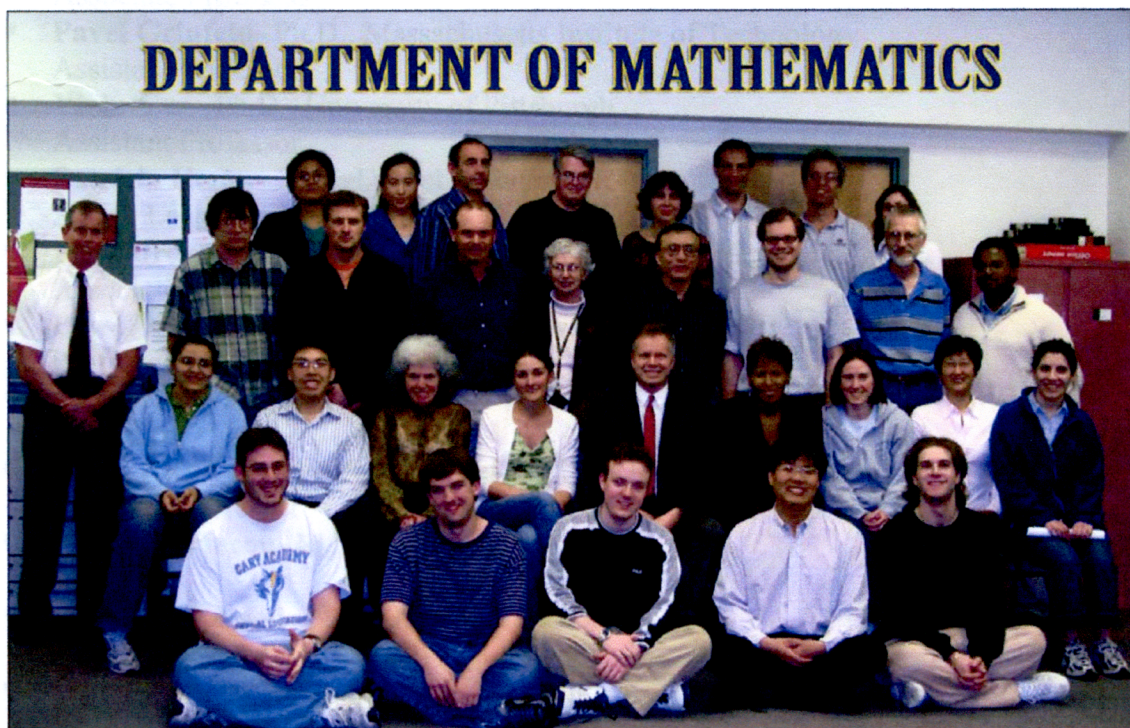# Drexel University
Department of Mathematics

2005-2006 Annual Report

FIRST ROW: Zack Murtha, Sean Durkin, Taylor Kingsbury, Yun Yoo, Brad Isaacson

SECOND ROW: Amal Aafif, Gene Phan, Elaine Kyriacou, Georgeanne Talarico, Hugo Woerdeman, Margaret Mercer, Meredith Coletta, Yixin Guo, Emek Kose

THIRD ROW: Jim Donnelly, Pawel Hitczenko, Andy Hicks, Robert Immordino, Pat Henry, Bill Goh, Pavel Grinfeld, Bob Boyer, Robert Henry

FOURTH ROW: Minnie Catral, Li Sheng, Alex Dolgopolsky, Justin Smith, Oksana Odintsova, Dmitry Kalyuzhnyi-Verbovetzkii, Eric Schmutz, Marna Mozeff

Drexel University Department of Mathematics Faculty

- **Robert P. Boyer**- Ph.D., University of Pennsylvania
  Professor
- **Minerva R. Catral**- Ph.D., University of Connecticut
  Senior Lecturer
- **Alexander Dolgolposky**- Ph.D., Case Western Reserve University
  Senior Lecturer
- **James W. Donnelly**- M.S., Drexel University
  Senior Lecturer
- **Raymond J. Favocci**- M.S. Drexel University
  Instructor
- **Ewaugh Fields**-Ed.D., Temple University
  Professor Emeritus and Dean Emeritus
- **Herman E. Gollwitzer**- Ph.D., University of Minnesota
  Associate Professor Emeritus
- **William M.-Y. Goh**- Ph.D., Ohio State University
  Associate Professor
- **Pavel Grinfeld**- Ph.D., Massachusetts Institute of Technology
  Assistant Professor
- **Yixin Guo**- Ph.D., University of Pittsburgh
  Assistant Professor
- **Patricia Henry**- M.S., Drexel University
  Senior Lecturer and Assistant Department Head
- **R. Andrew Hicks**- Ph.D., University of Pennsylvania
  Associate Professor
- **Pawel Hitczenko**- Ph.D., Warsaw University, Poland
  Professor
- **Robert Immordino**- B.S., Drexel University
  Instructor
- **Dmitry Kalyuzhnyi-Verbovetzki**- Ph.D., Kharkov University, Russia
  Assistant Professor
- **Elaine Kyriacou**- M.S. Rutgers University
  Instructor
- **Douglas McLeod**- Ph.D., Drexel University
  Senior Lecturer
- **Georgi S. Medvedev**- Ph.D., Boston College
  Assistant Professor
- **Marna Mozeff-Hartmann**- M.S., Drexel University
  Instructor and Academic Advisor
- **James Muscatell**- M.S., Drexel University
  Instructor
- **Gregory L. Naber**-D.A. Carnegie Mellon University
  Senior Lecturer
- **Okasana P. Odintsova**- Ph.D., Omsk State University
  Senior Lecturer

- **Ronald K. Perline-** Ph.D., University of California at Berkley
  Associate Professor
- **Marci A. Perlstadt-** Ph.D., University of California at Berkley
  Associate Professor
- **Adam C. Rickert-** M.S., Drexel University
  Instructor
- **Eric J. Schmutz-** Ph.D., University of Pennsylvania
  Associate Professor
- **Li Sheng-** Ph.D. Rutgers University
  Associate Professor
- **Justin R. Smith-** Ph.D., New York University
  Professor
- **Jeanne M. Steuber-** M.S., Boston University
  Instructor
- **Hugo J. Woerdeman-** Ph.D., Vrije Universiteit, Amsterdam
  Professor and Department Head
- **Thomas P.-Y. Yu-** Ph.D., Stanford University
  Visiting Associate Professor

Mathematics Department Colloquium
Drexel University
Winter Term 2005-2006

February 6, 2006
Tom Duchamp
(University of Washington)
"Manifold Estimation and Estimation on Manifolds"

February 8, 2006
Jennifer Morse
(University of Miami)
"Refined Combinatorics and Geometry of Schur Functions"

February 17, 2006
Jackie Shen
(University of Minnesota)
"Variational-PDE Modeling of Oscillatory & Stochastic Image Patterns"

Mathematics Department Colloquium
Drexel University
Fall Term 2005-2006

October 19, 2005
Victor Vinnikov
(Ben-Gurion University)
"Matrix Convexity"

October 25, 2005
Mikhael Klin
(Ben-Gurion University)
"Links Between Latin Squares, Nets, Graphs, and Groups"

November 7, 2005
Michael Dritschel
(University of New Castle)
"Interpolation in Semigroupoid Algebras"

November 16, 2005
Greg Naber
(Drexel University)
"Localization and Stationary Phase Approximation"

November 28, 2005
Garikai Campell
(Swarthmore College)
"Rational Triangle, Elliptical Curves, and National Security"

Mathematics Department Analysis Seminars
Drexel University
Winter Term 2005-2006

January 12, 2006
Hugo Woerdeman
(Drexel University)
"Totally Non-negative Matrices"

January 19, 2006
Robert Boyer
(Drexel University)
"Totally Non-negative Matrices"

January 26, 2006
Hugo Woerdeman
(Drexel University)
"Totally Non-negative Matrices"

February 2, 2006
Jeffrey Geronimo
(Georgia Institute of Technology)
"Two Variable Orthogonal Polynomials and Fejer-Riesz Factorization"

February 9, 2006
Robert Boyer
(Drexel University)
"Totally Positive Matrices continued…"

March 2, 2006
Jason Reed
(Drexel University)
"Doubly Toeplitz Extensions"

Mathematics Department Colloquium
Drexel University
Spring Term 2005-2006

April 10, 2006
Jerry Kazdan
(University of Pennsylvania)
"Applications of Partial Differential Equations to Geometry"

April 24, 2006
Leiba Rodman
(The College of William and Mary)
"Normal Linear Transformations in Vector Spaces with Indefinite Metric"

May 1, 2006
Mark Ward
(University of Pennsylvania)
"An Invitation to Combinatorial Game Theory"

May 8, 2006
Daniel B. Szyld
(Temple University)
"Practical Use of Krylov Subspace Methods: Inexact and Truncated Versions"

May 15, 2006
Joseph A. Ball
(Virginia Tech)
"Generalized Schur-Nevanlinna-Pick Interpolation and Infinite
Dimensional Linear Systems"

June 8, 2006
Jaecek Turski
"Geometric Fourier Analysis of the Conformal Camera: Mathematical and
Physiological Perspectives"

Mathematics Department Analysis Seminars
Drexel University
Spring Term 2005-2006

April 13, 2006
Dmitry Kalyuzhnyi-Verbovetzki
(Drexel University)
"Non-commutative Caratheodory Interpolation and von Neumann Inequalities, Revisited:
A Minor Improvement of My Two Different Results by a Common Method"

April 20, 2006
Hugo Woerdeman
(Drexel University)
"Normal Extensions"

April 27, 2006
Robert Boyer
(Drexel University)
"Riemann Hilbert Problems and Orthogonal Polynomials"

May 4, 2006
Robert Boyer
(Drexel University)
"Riemann Hilbert Problems and Orthogonal Polynomials, continued"

May 11, 2006
Thomas Yu
(Drexel University)
"Approximation Order of Certain Interpolation Schemes for Manifold Valued Data"

Faculty Achievements, Publications, Research and Innovations in Teaching

Robert P. Boyer

Published Works

On the Zero Attractor of the Euler Polynomials, Advances in Applied Mathematics Volume **38** (2007) 97-132 (with Bill Goh)

Panoramic Image Processing using Non-commutative Harmonic Analysis, in Multiscale Optimization Methods and Applications, (W. Hager and P. Pardalos, editors), Springer, New York, January 2006; pages 229-240

Characters of Infinite Wreath Products, International Journal of Mathematics and Mathematical Sciences 2005:9 (2005), 1365-1379.

Poster Presentations, Conference Papers and Other Works

Minisymposium Speaker, SIAM Meeting on Imaging Science, May 2006

Speaker, Combinatorics Seminar, MIT, December 2005.

Speaker Session Speaker, Special Functions, Orthogonal Polynomials and Applications, American Mathematical Society Meeting, October 2005.

Poster, SIAM Annual Meeting

R. Boyer and T. Theodosopoulos, Periodic attractors of random truncator maps, Third International Conference: news, expectations and trends in statistical physics, August 2005.

A. Amal (speaker) and R. Boyer, Group theoretic approach to recovery of omnidirectional images, Sixth International Conference on Computer Vision, Pattern Recognition, and Image Processing (CVPRIP), July 2005.

M. Badshah (speaker), R. Boyer, and T. Theodosopoulos, Properties of a renewal process approximation for a spin market model, Fourth International Conference on Computational Intelligence in Economics and Finance (CIEF), July 2005.

M. Badshah (speaker), R. Boyer, and T. Theodosopoulos, Statistical properties of temperature and alpha in a model for market microstructure, Society for Industrial and Applied Mathematics, July 2005.

Professional Societies

Member, Society for Industrial and Applied Mathematics (SIAM)

Member, SIAM Special Activity Group in Imaging Science

Member, SIAM Special Activity Group in Mathematical Finance

Member, SIAM Special Activity Group in Special Functions & Orthogonal Polynomials

Member, Mathematical Association of America (MAA)

Offices Held

MAA EPaDEL: Executive Committee (Eastern PA and Delaware Section)

College, Department, and Community Committees

CoAS Committee for Integrative Educational Experience (Winter and Spring Terms)

Math Department Faculty Search Committee (Chair), Graduate Advisor, Graduate Curriculum Committee, AJ Herr Teaching Award Committee (Chair), Member, Tenure and Promotion Committee

Faculty Advisor, SIAM Student Chapter

SIAM representative at the US State Department Dinner in honor of the US Mathematical Olympiad Winners

Minerva Catral

Published Works

On Functions that Preserve M-matrices and Inverse M-Matrices, (with R. Bapat and M. Neumann), Linear and Multilinear Algebra, vol. 53, no.3:193-201, 2005

Proximity in Group Inverses of M-Matrices and Inverse of Diagonally Dominant M-matrices, (with M. Neumann and J. Xu), Linear Algebra and Its Applications, 409:32-50, 2005

Matrix Analysis of a Markov Chain Small World Model (with M. Neumann and J. Xu), Linear Algebra and Its Applications, 409:126-146, 2005

Poster Presentations, Conference Papers and Other Works

"Group Inverses and Mean First Passage Matrices in Finite Ergodic Markov Chains", Temple University Mathematics Colloquium, Philadelphia, Pennsylvania, April 2005

Other Scholarly Activities

Referee, Linear Algebra and Its Applications
Referee, Electronic Journal of Linear Algebra

New Courses, Lab Preparation, and Teaching Innovations

Made use of "clickers" in two large lectures of Math 290 (Spring Term 2006)
Made use of PowerPoint in lectures with lectures posted on the course webpage
Used pen tablet in Math 201 lectures (Summer Term 2006)
Assigned MATLAB projects that were adapted from textbook in Math 290

Honors and Awards

University of Connecticut Doctoral Dissertation Fellowship, Spring 2005

Professional Societies

Member, American Mathematical Society (AMS)

James W. Donnelly

New Courses, Lab Preparation, and Teaching Innovations

Architect and builder for the current four course Calculus sequence offering as evidenced by the full featured websites he created and maintained for all four courses

Coordinated the testing and communication between the day and evening offerings of the same courses

Department Administrative Appointments

Operational management, including the staffing and scheduling of tutors and work study students, in the Korman Resource Center for Tutoring

Honors and Awards

Recipient of the Barbara G. Hornum Award for Teaching Excellence 2006

Pavel Grinfeld

Published Works

Grinfeld, Pavel; Wisdom, Jack A way to compute the gravitational potential for near-spherical geometries. *Quart. Appl. Math.* 64 (2006), no. 2, 229--252.

Grinfeld, Pavel; Wisdom, Jack Total gravitational energy of a slightly ellipsoidal trilayer planet. *Quart. Appl. Math.* 64 (2006), no. 2, 271--281.

Poster Presentation, Conference Papers and Other Works

Presenter at the Workshop on the Teaching of Linear Algebra (Spring 2006)

College, Department, and Community Committees

Workshop on the Teaching of Linear Algebra (Spring 2006)

Math Department Undergraduate Curriculum, Computer Committee, Candidacy Exam Committee Actuarial Science/Financial Math Program Committee

Yixin Guo

Published Works

Yixin Guo and Carson C. Chow. *Existence and Stability of Standing Pulses in Neural Networks: I Existence*, SIAM Journal on Applied Dynamical Systems Vol 4, 217-248, *2005*

Yixin Guo and Carson C. Chow. *Existence and Stability of Standing Pulses in Neural Networks: II Stability*, SIAM Journal on Applied Dynamical Systems Vol 4, 249-281, *2005*

Poster Presentations, Conference Papers and Other Works

Center for Neurodegenerative Disease Research, University of Pennsylvania, Invited talk, Modeling Parkinson's Disease and Deep Brain Stimulation, Philadelphia, PA, August 2006

The Department of Neurobiology and Anatomy, Drexel University, Invited talk, Modeling Parkinson's Disease and Deep Brain Stimulation, Philadelphia, PA, June 2006

SIAM chapter at the Department of Mathematics, Drexel University, Invited talk, Modeling Neural Circuits, Philadelphia, PA, April 2006

Professional Societies

Member, American Mathematical Society (AMS)

Member, Society for Industrial and Applied Mathematics (SIAM)

Member, Society for Mathematical Biology (SMB)

R. Andrew Hicks

Published Works

R. A. Hicks, M. Millstone, K. Daniilidis. Realizing any central projection with a foldedcatadioptric sensor. *AppliedOptics*, Volume 45, Issue 28, October 2006, pages 7205-7210.

R. A. Hicks, R. Perline. Equiresolution catadioptric sensors. *AppliedOptics*, Volume 44, Issue 29, October 2005, pages 6108-6114.

V. T.Nasis, R. A. Hicks, T. Kurzweg.Digital Photographic Imagingusing MOEMS Proceedings of IEEE Photonics West 2006, SPIE Volume 6109 Micromachining and Microfabrication Process Technology XI, Mary-Ann Maher, Harold D. Stewart, Jung-Chih Chiao, Editors, January 2006, pages 6114-6124.

Poster Presentations, Conference Papers and Other Works

Geometric Methods in Optical Design. Lehigh University Geometry and Topology Conference, June 2006, Bethlehem Pennsylvania. Invited talk

Distributions for optical design. Courant Institute of Mathematical Sciences, New York University, April 2006. Invited talk

Distributions for optical design. Applied Mathematics and Computational Science seminar, University of Pennsylvania, March 2006. Invited talk

The blindspot problem and panoramic vision. Department of Computer Science, Drexel University, January 2006. Invited talk

The blindspot problem and panoramic vision. Drexel MCS Society, Drexel University, October 2005. Invited talk

College, Department, and Community Committees

Math Department Computer Committee (Chair)

Franklin Institute Advisory Board Member

European Conference on Computer Vision 2006

OMNIVIS 2006

Computer Vision and Pattern Recognition 2005-2006

Other Scholarly Activities

Reviewer, ACM Transactions on Graphics
Reviewer, Applied Optics
Reviewer, Computer Vision and Image Understanding
Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence
Reviewer, IEEE Transactions on Robotics and Automation
Reviewer, Special Issue on Omnidirectional Vision in Robotics
Reviewer, Journal of Mathematical Imaging Vision
Reviewer, Journal of Optical Society of America

Grants

NSF Org: IIS 0413012
Program: IIS Robotics
Title: Micromirror Arrays for Imaging PI:R.
Amount: $340,000
Grant Period: 10/01/04-10/01/07

Pawel Hitczenko

Published Works

Distribution of a class of divide and conquer recurrences arising from the computation of the Walsh-Hadamard transform, (joint with J.R. Johnson and H.J. Huang), *Theoretical Computer Science* **352** (2006), 8-30.

Cache miss analysis of WHT algorithms, (joint with M. Furis and J.R. Johnson), *Discrete Mathematics and Theoretical Computer Science* AD, pp. 115-124, 2005.

Central Limit Theorem for the size of the range of a renewal process, (joint with R. Pemantle), *Statistics and Probability Letters.* **72** (2005), 249-264.

Gap-free compositions and gap-free samples of geometric random variables, (joint with A. Knopfmacher), *Discrete Math.* **294** (2005), 225-239. A shorter version, Gap-free samples of geometric random variables, appeared in the Proceedings of the ANALCO 04 meeting.

Poster Presentations, Conference Papers and Other Works

Probability Seminar, University of Delaware, December 2005.

8th Workshop on Algorithm Engineering and Experiments and the 3rd Workshop on Analytic Algorithmics and Combinatorics, Miami, Florida January 2006.

Probability Seminar, Graduate Center , City University of New York, April 2006.

11th Seminar on the Analysis of Algorithms, Alden Biesen, Belgium, July 2006.

New Course, Lab Preparation and Teaching Innovations

Taught the new course, MATH 680, Mathematics of the Analysis of Algorithms, Spring 2006.

College, Department and Community Committee

Math Department Graduate Program Committee (Chair)

Math Department Search Committee

Math Department Tenure and Promotion Committee

Drexel University Graduate Program Committee

Other Scholarly Activities

Reviewer, Research Grant Proposal for the Israel Science Foundation
Reviewer, Book Prospectus for Elsevier
Referred 7 papers for various journals
Authored 6 reviews for Mathematical Reviews

Grants

National Security Agency Grant (PI, November 2004-November 2006).

National Science Foundation US-France Cooperative Research Grant
(Co-PI, February 2003-January 2007).

Elaine Kyriacou

New Courses, Lab Preparation, and Teaching Innovations

Allocated time at the end of each lecture for a problem session. Students worked on
problems, either individually or with others, while professor would circulate around the room
providing students with individual help an innovation for the Mathematics Department.

Coordinator for Math 101 (Spring 2006)

College, Department and Community Committees

Advisor, organizer, promoter and recruiter for "Women in Math and Science", a new organization
for undergraduate students to pursue careers in Math and Science

Participated in Brown Bag lunches held by the Center for Academic Excellence

Seminar "Creating Significant Learning Experiences" LeBow College Center for Teaching
Excellence (Spring 2006)

Professional Societies

Member, National Council of Teachers of Mathematics (NCTM)

Georgi Medvedev

Published Works

G.S. Medvedev, *On transition to bursting via deterministic chaos,* Physical review Letters 97,
048102, 2006

Poster Presentations, Conference Papers and Other Works

Poster, Society for Neuroscience Annual Meeting, Atlanta, GA, Oct. 2006

Poster, Drexel Research Day, Drexel University, May 2005

Conference on Mathematical Neuroscience (a satellite activity of the International Congress of
Mathematics'06), Andorra, Aug. 2006, Invited speaker

American Institute of Mathematics' Sixth International Conference on Dyn. Systems, Diff.
Equations and Applications, France, June 2006, Invited talk

Workshop: Origin and regulation of bursting activity in neurons, Georgia State University, April, 2006, Invited talk

System Neurosci Group Seminar, Department of Neurobiology and Anatomy, Drexel University College of Medicine, March 2006

AMS/MAA/SIAM meeting, San Antonio, TX, January 2006, Invited talk

Mathematics Colloquium, Rensselaer Polytechnic Institute, January 2006

Applied Mathematics Colloquium, University of Pennsylvania, December 2005

Applications of Methods of Stochastic Systems and Statistical Physics in Biology, University of Notre Dame, October 2005

International Workshop on Applied Dynamical Systems-Mechanics, Turbulence, Knots, Cockroaches, and Chaos. University of Montreal, October 2005

Mathematical Neuroscience Seminar, Indiana University-Purdue University at Indianapolis, October 2005

Applied Analysis and Computation Seminar, University of Massachusetts, Amherst, September 2005

Multimodal oscillations: from dopamine neurons to solid fuel combustion
prepared for   Conference on Mathematical Neuroscience (a satellite activity of the ICM06), Andorra, 2006

Multimodal oscillations in systems with strong contraction
prepared for AIMS' Sixth International Conference on Dyn. Systems, Diff. Equations and Applications June, 2006

Using one-dimensional maps for analyzing neuronal dynamics Prepared for AMS meeting, seminars and colloquia, January 2006

Statistics of irregular bursting (with P. Hitczenko), prepared for Annual Neurosci meeting 2006

Bifurcation scenarios near a degenerate Androno-Hopf bifurcation (with Y. Yoo), Drexel Research Day 2006

Grants

Continuing National Science Foundation (NSF) grant 2005-2006

College, Department and Community Committees

Math Department Hiring Committee

Math Department Graduate Committee

Graduate Admissions Subcommittee (Chair)

Math Department Qualifying Exam Subcommittee (Chair)

Other Scholarly Activities

Reviewer, Journal of Computational Neuroscience

Reviewer, SIAM Journal of Math Analysis

Reviewer, Physics A

Professional Societies

Member, American Mathematical Society (AMS)

Member, Society for Industrial and Applied Mathematics (SIAM)

Member, Society for Neuroscience (SFN)

Marna Mozeff Hartmann

New Courses, Lab Preparation, and Teaching Innovations
Math 101 and Math 102 sequence changed to allow continuous feedback to students, business projects, weekly quizzes, graded homework, along with a format change to smaller classes

College, Department and Community Committees

Participant in the E-portfolio initiative for the LeBow College of Business

Professional Societies

Member, National Council of Teachers of Mathematics (NCTM)

Member, National Academic Advisors Association (NACADA)

Gregory Naber

Published Works

G. Naber, Editor-in-Chief for the Encyclopedia of Mathematical Physics, Vol. 1

G. Naber, *Minkowski Space-time and Special Relativity*, Encyclopedia of Mathematical Physics, Vol. 1-5

Poster Presentations, Conference Papers and Other Works

Published Lecture Notes on Localization at the Max Plank Institute for Mathematics in the Sciences

Presented a series of nine, two hour lectures on Localization while at the Max Plank Institute

New Courses, Lab Preparation and Teaching Innovation

Developed an honors calculus sequence for the Engineering students

Offered an independent study course on Algebraic Topology

Student, Alex Perry did an undergraduate research project on "Quaternions" which resulted in a 46 page paper under Dr. Naber's direction

College, Department, and Community Committees

Organizer of the Mathematics Department Colloquiums, organized all the speakers, provided refreshments, and extended hospitality for guest lecturers

Oksana Odintsova

Professional Societies

Member, American Mathematical Society (AMS)

Ronald Perline

Published Works

Equiresolution Catadioptric Sensors R. Andrew Hicks, Ronald K. Perline
Applied Optics, Volume 44, Issue 29, pages 6108-6114, October 2005

Blind-spot problem for motor vehicles R. Andrew Hicks, Ronald K. Perline
Applied Optics, Volume 44, Issue 19, pages 3893-3897, July 2005

Poster Presentations, Conference Papers and Other Works

"Developments in integrable curve evolution", Department of Math, University of New South Wales

"Exact Solutions of Integrable Curve Dynamics and Painleve functions", Department. of Math, University of Sydney

Other Scholarly Activities

Meccanica Aimeta (October 2005)

Journal of Nonlinear Science (October 2005)

Marci Perlstadt

College, Department and Community Activities

Member, Undergraduate Curriculum Committee

Professional Societies

Member, American Mathematical Society (AMS)

Member, Mathematical Association of America (MAA)

Member, Association for Women in Mathematics (AWM)

Adam Rickert

Letters, reviews, notes and non-refereed publications

Reviewed manuscript of the 2nd edition of William Navidi's *Statistics for Engineering and Sciences*

Compared and contrasted the materials from Devore's *Probability and Statistics for Engineering and Sciences* and Navidi's *Statistics for Engineering and Scientists*

Eric Schmutz

Published Works

The Expected Size of the Rule k Dominating Set (with Jennie C. Hansen and Li Sheng)
Algorithmica 46, (2006)

Other Scholarly Activities

Refereed, Random Structures and Algorithms

College, Department, and Community Committees

Undergraduate Curriculum Committee
Graduate Committee
Tenure and Promotion Subcommittee

Li Sheng

Published Works

The Expected Size of the Rule k Dominating Set: I (with Jennie C. Hansen and Eric Schmutz), submitted to special issue of Algorithmica devoted to the analysis of algorithms, Resubmitted Nov 2005, Accepted Jan 19, 2006, volume 46 number 3/4.

Grants

NSF Grant CCR-0311413
Title: Physical Mapping: Models, Complexities, and Algorithms
Amount $90,000
Grant Period 7/1/03-6/30/05 ($60,222) 7/1/05-6/30/06 ($29,778)

Other Scholarly Activities

Session Chair, Workshop on Combinatorial Group Testing, May 2006. Dimacs, Rutgers University.

Justin Smith

New Courses, Lab Preparation, and Teaching Innovations

Math 316 -Use of Symbolic Software in Mathematics: Designed course to purse topics typically too advanced for undergraduate calculus such as Fourier series, series of orthogonal polynomials, Partial differential equations, Heat and Wave equations and the Calculus of Variations. All lecture notes were typed using Maple's document format and posted online.

College, Department and Community Committees

Alternate Senator in the Drexel University Faculty Senate

Dean's Advisory Committee

College Tenure and Promotion Committee

Chair, Tenure and Promotion Committee

Computer Committee

Dmitry Kaliuzhnyi-Verbovetskyi

Published Works

Alpay, D.; Kalyuzhny\u\i-Verbovetzki\u\i, D. S. Matrix-J-unitary non-commutative rational formal power series. The state space method generalizations and applications, 49--113, Oper. Theory Adv. Appl., 161, Birkhäuser, Basel, 2006.

Kalyuzhnyi-Verbovetski\u\i, Dmitry S.; Vinnikov, Victor Non-commutative positive kernels and their matrix evaluations. Proc. Amer. Math. Soc. 134 (2006), no. 3, 805--816 (electronic).

Kalyuzhny\u\i-Verbovetzki\u\i, Dmitry S. Multivariable ρ-contractions. Recent advances in operator theory and its applications, 273--298, Oper. Theory Adv. Appl., 160, Birkhäuser, Basel, 2005.

Kalyuzhny\u\i-Verbovetzki\u\i, Dmitry S. Carathéodory interpolation on the non-commutative polydisk. J. Funct. Anal. 229 (2005), no. 2, 241--276.

Kalyuzhny\u\i-Verbovetzki\u\i, Dmitry S. On the Bessmertny\u\i class of homogeneous positive holomorphic functions on a product of matrix halfplanes. Operator theory, systems theory and scattering theory: multidimensional generalizations, 139--164, Oper. Theory Adv. Appl., 157, Birkhäuser, Basel, 2005.

Poster Presentations, Conference Papers and Other Works

Presented talk, Caratheodory interpolation on the non-commutative polydisk. Presented at the South-Eastern Analysis Meeting (SEAM 2006) Gainsville, Florida, March 2006.

Invited talk , On a problem of minimal matrix-unitary completion of a proper matrix-contractive rational non-commutative formal power series. Presented at the 17th International Symposium on Mathematical Theory of Network and Systems (MTNS 2006), Kyoto, Japan, July 2006.

Presented talk, Non-commutative functions and the Taylor-Taylor formula. Presented at the 17th International Workshop on Operator Theory and Applications (IWOTA 2006) Seoul, Korea July 2006.

Other Scholarly Activities

Refereed, Caratheodory interpolation on the non-commutative polydisk, J. Funct. Anal., 229 2005), pp. 241-276

Refereed, Matrix-J-unitary non-commutative rational formal powers series, Operator Theory: Adv.Appl.,161 (2006), pp. 49-114. (with D. Alpay)

Refereed, Non-commutative positive kernels and their matrix evaluations, Proc. Amer. Math. Soc., 134 (2006), no.3, pp. 805-816. (with V. Vinnikov)

6 review articles in the journal, Mathematical Reviews of the American Mathematical Society

5 review articles in the journal, Zentralblatt fur Mathematik (Germany)

Refereed for the journal Linear Algebra and Its Applications, May 2006

College Department, and Community Committees

Member, Department Search Committee

Member, Department Space Committee

Hugo Woerdeman

Published Works

Geronimo, Jeffrey S.; Woerdeman, Hugo J. Two-variable polynomials: intersecting zeros and stability. *IEEE Trans. Circuits Syst. I Regul. Pap.* 53 (2006), no.5, 1130—1139.

Li, Chi-Kwong; Woerdeman, Hugo J. A lower bound on the C-numerical radius of nilpotent matrices appearing in coherent spectroscopy. *SIAM J. Matrix Anal. Appl.* 27 (2005), no.3, 793-800

Geronimo, Jeffrey S.: Woerdeman, Hugo J. The operator valued autoregressive filter problem and suboptimal Nehari problem in two variables. *Integral Equations Operator Theory* 53 (2005), no.3, 343-361

Dritschel, Michael A.; Woerdeman, Hugo J. Outer factorizations in one and several variables. Trans. Amer. Math. Soc. 357 (2005), no. 11, 4661--4679

Li, Chi-Kwong; Woerdeman, Hugo; Zhang, Fuzhen Preface and conference report [Special issue devoted to papers presented at the International Meeting on Matrix Analysis and Applications]. Held at Nova Southeastern University, Fort Lauderdale, FL, December 14--16, 2003. Linear Algebra Appl. 399 (2005), 1--2. 15-06

Hachez, Yvan; Woerdeman, Hugo J. Approximating sums of squares with a single square. Linear Algebra Appl. 399 (2005), 187--201.

Poster Presentations, Conference Papers, and Other Works

Poster presentation, Integrable Systems, Random Matrices, and Applications (Conference in honor of Percy Deift's 60th birthday), May 2006

Invited Plenary Speaker, International Linear Algebra Society Meeting, Amsterdam, July 2006

Participant, Virginia Operator Theory and Complex Analysis Meeting, October 2005

Dean's Seminar, Drexel University, June 2006

Other Scholarly Activities

The article: *Positive extensions, Fejer-Riesz factorization and autoregressive filters in two variables* JS Geronimo and HJ Woerdeman) ANNALS of MATHEMATICS 160 (3): 839-906 NOV 2004 was identified by Essential Science Indicators as one of the most cited recent papers in the field of Mathematics

Grants

National Science Foundation Division of Math Sciences proposal 0500678 awarded $76,000 (2005-2008)

Supplement to National Science Foundation Division of Math Science proposal 0500678, awarded $13,950 (2005-2008).

Honors and Awards

A book proposal resulted in a contract with Princeton University Press. The book, to be co-authored with Mihaly Bakonyi from Georgia State University, has a working title *Matrix Completions, Moments and Factorizations*. It is a research monograph that can be used as a textbook for a special topics graduate course.

College, Department and Community Committees

D3 committee

Biology Department Head Search Committee

Internal grant review committee (ad hoc requests)

Other Scholarly Activities

Editor, SIAM Journal Matrix Analysis and Applications. (2002-present)

Referee, 7 articles of various journals

Authored 3 Math Reviews

Served on National Science Foundation panel.

Served on the Board of the International Linear Algebra Society (term ended February 2006)

Co-organized the first installment of the Workshop on the Teaching of Linear Algebra, Drexel University, March 2006

Professional Societies

Member, American Mathematical Society (AMS)

Member, Society for Industrial and Applied Mathematics (SIAM)

Member, American Association of University Professors (AAUP)

Thomas Yu

Published Works

Yu, Thomas Pok-Yin How data dependent is a nonlinear subdivision scheme? A case study based on convexity preserving subdivision. SIAM J. Numer. Anal.44 (2006), no. 3, 936--948 (electronic).

Yu, Thomas P.-Y. Cutting corners on the sphere. Wavelets and splines: Athens 2005, 496--506, Mod. Methods Math., Nashboro Press, Brentwood, TN, 2006.

Han, Bin; Yu, Thomas P.-Y. Face-based Hermite subdivision schemes. J. Concr. Appl. Math. 4 (2006), no. 4, 435--450.

Xue, Yonggang; Yu, Thomas P.-Y.; Duchamp, Tom Jet subdivision schemes on the k-regular complex. Comput. Aided Geom. Design 23 (2006), no. 4, 361--396.

Lin, Gang; Yu, Thomas P-Y. An Improved Vertex Caching Scheme for 3D Mesh Rendering IEEE Transactions on Visualization and Computer Graphics, (2006), no.12, no. 4, 640—648

Xie, Gang; Yu, Thomas P.-Y. Smoothness analysis of nonlinear subdivision schemes of homogeneous and affine invariant type. Constr. Approx. 22 (2005), no. 2, 219--254.

Han, Bin; Yu, Thomas P.-Y.; Xue, Yonggang Noninterpolatory Hermite subdivision schemes. Math. Comp. 74 (2005), no. 251, 1345--1367 (electronic).

Xue, Yonggang; Yu, Thomas P.-Y. Honeycomb and k-fold Hermite subdivision schemes. J. Comput. Appl. Math. 177 (2005), no. 2, 401--425.

Yu, Thomas P.-Y. On the regularity analysis of interpolatory Hermite subdivision schemes. J. Math. Anal. Appl. 302 (2005), no. 1, 201--216. (Reviewer: Shai Dekel) 42C40

Poster Presentations, Conference Papers, and Other Works

Jet Subdivision Surfaces, SIAM Conference on Geometric Computing and Design, Phoenix, Arizona, November 2005

Approximation Theory for Manifold-Valued Data, Department of Mathematics, Temple University, January 2006

Approximation Theory for Manifold-Valued Data, Department of Mathematics, Drexel University, February 2006

Smoothness Equivalence Properties of Manifold-Value Data Subdivision Schemes based on the Projection Approach, International Conference on Curves and Surfaces, France, July 2006.

Subdivision Methods in Geometric and Nonlinear Settings, Department of Computer Science, University of Dortmund, Germany, July 2006.

Grants

NSF Org: DMS 05342237
Title: Multiscale Data Representations in Geometric and Nonlinear Settings
Amount: $98,839
Grant Period: 09/01/05-08/31/07

DREXEL UNIVERSITY MATHEMATICS DEPARTMENT

DEAN'S SEMINAR 2005-2006

"TOWARDS A NON-COMMUTATIVE FUNCTION THEORY"

SPEAKER: DMITRY KALYUZHNYI-VERBOVERTZKII

DATE: DECEMBER 14, 2005

Abstract: Matrices do not commute: for two square matrices A and B their products AB and BA are, generally speaking, not the same. So, polynomials or power series in several square matrices, which are natural analogues of single-variable polynomials or analytic functions, are non-commutative objects. I am going to demonstrate an approach to generalization of the classical theory of analytic functions of one variable to the case of several non-commuting variables.
No prerequisites other than some loose memories from elementary algebra and calculus are required. However, certain readiness to watch formulas and to follow mathematical reasonings is expected (though as well as to fall asleep at any time).
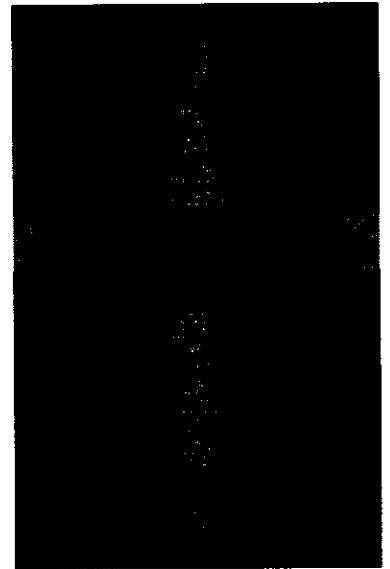
"MOVING SURFACES: HOW TO HARNESS THEM AND MAKE THEM WORK FOR YOU"

Speaker: Pavel Grinfeld
Date: April 26, 2006

Abstract: Moving surfaces are so command that any enumeration would be superfluous. As a mathematical tool, the calculus of moving surfaces reaches far beyond material surfaces in motion and provides crucial applications in variational analysis and shape optimization, perturbation theory, and unknown boundary problems. I will give a demonstration of the calculus of moving surfaces and survey applications to problems in low temperature physics and quantum mechanics, materials science and stress driven instabilities, including applications to quantum dots and bone growth, geophysics and inner core dynamics, as well as applications to the Laplace Eigen value equation.
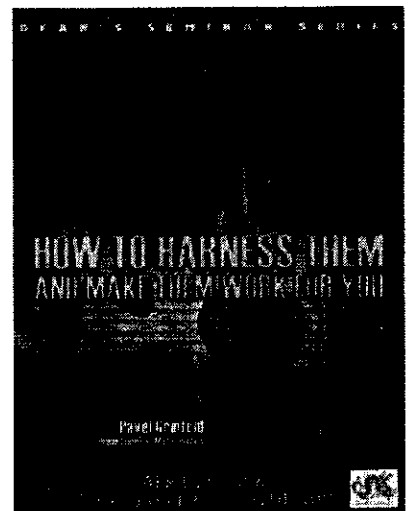
"SUMS OF SQUARES: FROM A FUNDAMENTAL MATHEMATICAL RESULT TO APPLICATIONS IN SCIENCE AND ENGINEERING"

Speaker: Hugo Woerdeman
Date: June 7, 2006

Abstract: There are numerous examples of mathematical results born out of pure mathematical curiosity that years later proved invaluable to those seeking solutions to 'real-life' mathematical problems. Sums of Squares is one such result, and it has since led to substantial progress in applied fields such as signal and image processing, control theory, optimization, etc. This exposition will include a historical synopsis, beginning with the year 1888 when David Hilbert first made his initial discoveries in this area, followed by a discussion of the current interest in this topic and its latest applications.
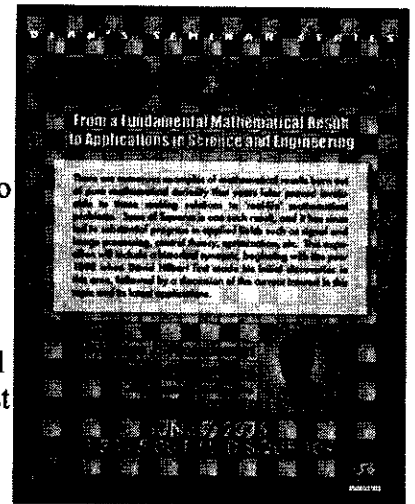
2005-2006 New Course Offerings

Fall 2005
MATH 504-Linear Algebra and Analysis
Instructor: Hugo J. Woerdeman

This course is a second course in linear algebra. Central to this course are the following ten theorems, which will be treated along with their background, consequences and applications:

1. Schur's unitary triangularization theorem
2. Spectral theorems for normal and hermitian matrices
3. QR factorization theorem
4. Jordan canonical form theorem
5. Courant Fisher theorem
6. Interlacing eigenvalues theorem
7. Gersgorin disc theorem
8. Polar decomposition theorem
9. Singular value decomposition theorem
10. Perron-Frobenius theorem

Spring 2006
MATH 680 – Special Topics
Mathematics of the Analysis of Algorithms
Instructor: Pawel Hitczenko

This one-term graduate course is intended as an introduction to mathematical methods that are used in modern analysis of algorithms. The rigorous analysis of algorithms was pioneered around thirty years ago by Don Knuth and since then has been an active and growing area of mathematical research. The course is intended primarily for math students as well as CS or engineering students with interest in theoretical aspects of computer science. The course will be based on a text by Robert Sedgewick and Philippe Flajolet An Introduction to the Analysis of Algorithms, which has been described as follows: This book provides a thorough introduction to the primary techniques used in the mathematical analysis of algorithms. The authors draw from classical mathematical material, including discrete mathematics, elementary real analysis, and combinatorics, as well as from classical computer science material, including algorithms and data structures. They focus on "average-case" or "probabilistic" analysis, although they also cover the basic mathematical tools required for "worst-case" or "complexity" analysis. Topics include recurrences, generating functions, asymptotics, trees, strings, maps, and an analysis of sorting, tree search, string search, and hashing algorithms. Despite the large interest in the mathematical analysis of algorithms, basic information

on methods and models in widespread use has not been directly accessible for work or study in the field. The authors here address this need, combining a body of material that gives the reader both an appreciation for the challenges of the field and the requisite background for keeping abreast of the new research being done to meet these challenges.

Highlights:
• Thorough, self-contained coverage for students and professionals in computer science and mathematics
• Focus on mathematical techniques of analysis Basic preparation for the advanced results covered in Knuth's books and the research literature
• Classical approaches and results in the analysis of algorithms

SPRING 2006
MATH 680 – Special Topics
Wavelets and Computational Signal Processing
Instructor: Thomas Yu

FALL 2006
MATH 680 – Special Topics
Introduction to Algebraic Topology
Instructor: Greg Naber
Linear Algebra is the study of sets with enough mathematical structure to make sense of the notion of a linear map between them (i.e., vector spaces). Topology is the study of sets with enough mathematical structure to make sense of the notion of a continuous map between them (i.e., topological spaces). Both subjects are vast, intimidating, and with literally hundreds of applications to virtually every area of mathematics, including to each other. This course will explore just one small, but powerful and very beautiful point of contact between the two, arising from the notion of a *differential form*. We will develop the rather considerable algebraic machinery required to define and study differential forms on open sets in **Rn**. From these we construct the so-called *de Rham cohomology groups*. These are basic topological invariants with which we will be able to prove some of the most renowned theorems of classical topology.

Fall 2006
MATH 630
Complex Variables
Instructor: Dmitry Kalyuzhnyi-Verbovetzki
Complex analysis is a necessary ingredient in education of a modern mathematician as well as a powerful tool for physicists and engineers. Many problems in algebra, analysis and their applications, formulated originally in terms of real variables, either could not be solved or have too complicated solution without extension

as well as a powerful tool for physicists and engineers. Many problems in algebra, analysis and their applications, formulated originally in terms of real variables, either could not be solved or have too complicated solution without extension to the setting of complex variables.

This one-term course is meant for graduate students majoring in mathematics, engineering or one of physical sciences, which have different backgrounds, however take common interest in both theoretical and applied aspects of complex analysis. The course covers:

• Geometry and topology of regions and curves in the complex plane;

• Basic topics of the theory of analytic functions of one variable (the Cauchy–Riemann equations, integration, power series expansions, the Cauchy theorem, the maximum modulus principle, etc.);

• Conformal mappings and their applications in physics;

• Analytic continuation;

• Residues;

• Laplace transformation and its application to ordinary differential equations;

• Applications of complex analysis to boundary value problems in mathematical physics (optional).

Fall 2005 Course	Course Title	Credit Hrs	Enrl	Instructors
MATH 100 001	Fundamentals of Mathematics	3	26	Smith, Judy
MATH 100 002	Fundamentals of Mathematics	3	27	Perlstadt, Marci
MATH 100 003	Fundamentals of Mathematics	3	27	Catral, Minerva
MATH 100 004	Fundamentals of Mathematics	3	27	Smith, Judy
MATH 100 005	Fundamentals of Mathematics	3	30	Rountree, Deidre
MATH 100 006	Fundamentals of Mathematics	3	23	Smith, Judy
MATH 100 007	Fundamentals of Mathematics	3	24	Coppola, John
MATH 100 008	Fundamentals of Mathematics	3	25	Sheng, Li
MATH 100 009	Fundamentals of Mathematics	3	22	Falco, Daryl
MATH 100 010	Fundamentals of Mathematics	3	20	Coppola, John
MATH 100 011	Fundamentals of Mathematics	3	26	Kyriacou, Elaine
MATH 100 012	Fundamentals of Mathematics	3	18	Dolgopolsky, Alexander
MATH 100 013	Fundamentals of Mathematics	3	31	Rountree, Deidre
MATH 100 014	Fundamentals of Mathematics	3	19	Catral, Minerva
MATH 100 015	Fundamentals of Mathematics	3	10	Dolgopolsky, Alexander
MATH 100 016	Fundamentals of Mathematics	3	18	Kyriacou, Elaine
MATH 100 681	Fundamentals of Mathematics	3	13	Shuman, Charles
MATH 100 900	Fundamentals of Mathematics	3	5	Mozeff, Marna
MATH 100 901	Fundamentals of Mathematics	3	7	Mozeff, Marna
MATH 101 001	Introduction to Analysis I	0	26	Matulis, John
MATH 101 002	Introduction to Analysis I	0	26	Hummel, William
MATH 101 003	Introduction to Analysis I	0	24	Hummel, William
MATH 101 004	Introduction to Analysis I	0	23	Hummel, William
MATH 101 005	Introduction to Analysis I	0	26	Jiang, Yanan
MATH 101 006	Introduction to Analysis I	0	25	Rickert, Adam
MATH 101 007	Introduction to Analysis I	0	24	Jiang, Yanan
MATH 101 011	Introduction to Analysis I	0	23	Jiang, Yanan
MATH 101 012	Introduction to Analysis I	0	25	Rickert, Adam
MATH 101 013	Introduction to Analysis I	0	16	Matulis, John
MATH 101 014	Introduction to Analysis I	0	15	Zhuravytska, Svitlana
MATH 101 015	Introduction to Analysis I	0	12	Zhuravytska, Svitlana
MATH 101 016	Introduction to Analysis I	0	11	Zhuravytska, Svitlana
MATH 101 017	Introduction to Analysis I	0	27	Matulis, John
MATH 101 018	Introduction to Analysis I	0	22	Rickert, Adam
MATH 101 023	Introduction to Analysis I	4	23	Odintsova, Oksana
MATH 101 024	Introduction to Analysis I	4	27	Muscatell, James
MATH 101 025	Introduction to Analysis I	4	29	Steuber, Jeanne
MATH 101 026	Introduction to Analysis I	4	29	Hamilton, James
MATH 101 028	Introduction to Analysis I	4	19	Odintsova, Oksana
MATH 101 029	Introduction to Analysis I	4	29	Steuber, Jeanne
MATH 101 030	Introduction to Analysis I	4	28	Hamilton, James
MATH 101 031	Introduction to Analysis I	4	26	Steuber, Jeanne
MATH 101 032	Introduction to Analysis I	4	24	Favocci, Raymond
MATH 101 033	Introduction to Analysis I	4	27	Odintsova, Oksana
MATH 101 035	Introduction to Analysis I	4	21	Muscatell, James
MATH 101 036	Introduction to Analysis I	4	28	Favocci, Raymond
MATH 101 038	Introduction to Analysis I	4	28	Favocci, Raymond
MATH 101 900	Introduction to Analysis I	4	4	Mozeff, Marna
MATH 101 A	Introduction to Analysis I	4	99	Fields, Ewaugh

Winter 2006				
Course	Course Title	Credit Hrs	Enrl	Instructor
TDEC 110 001	Math Fndns Engr I	0.	21	Maahs, Ken (Primary Instr)
TDEC 110 002	Math Fndns Engr I	0.	21	Maahs, Ken (Primary Instr)
TDEC 110 003	Math Fndns Engr I	0.	18	Kose, Emek (Primary Instr)
TDEC 110 004	Math Fndns Engr I	0.	21	Kose, Emek (Primary Instr)
TDEC 110 005	Math Fndns Engr I	0.	10	Kose, Emek (Primary Instr)
TDEC 110 006	Math Fndns Engr I	0.	21	Maahs, Ken (Primary Instr)
TDEC 110 A	Math Fndns Engr I	3.	112	Falco, Daryl (Primary Instr)
TDEC 112 002	Math Fndns Of Engr II	0.	24	Shen, David (Primary Instr)
TDEC 112 004	Math Fndns Of Engr II	0.	25	Isaacson, Brad (Primary Instr)
TDEC 112 006	Math Fndns Of Engr II	0.	22	Immordino, Robert (Primary Instr)
TDEC 112 007	Math Fndns Of Engr II	0.	24	Shen, David (Primary Instr)
TDEC 112 008	Math Fndns Of Engr II	0.	19	Murtha, Steven (Primary Instr)
TDEC 112 009	Math Fndns Of Engr II	0.	22	Durkin, Sean (Primary Instr)
TDEC 112 010	Math Fndns Of Engr II	0.	24	Kingsbury, Taylor (Primary Instr)
TDEC 112 011	Math Fndns Of Engr II	0.	25	Isaacson, Brad (Primary Instr)
TDEC 112 012	Math Fndns Of Engr II	0.	24	Murtha, Steven (Primary Instr)
TDEC 112 014	Math Fndns Of Engr II	0.	22	Kingsbury, Taylor (Primary Instr)
TDEC 112 015	Math Fndns Of Engr II	0.	23	Murtha, Steven (Primary Instr)
TDEC 112 016	Math Fndns Of Engr II	0.	25	Immordino, Robert (Primary Instr)
TDEC 112 017	Math Fndns Of Engr II	0.	20	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 112 01H	Math Fndns Of Engr II	0.	21	Reed, Robert (Primary Instr)
TDEC 112 020	Math Fndns Of Engr II	0.	24	Immordino, Robert (Primary Instr)
TDEC 112 022	Math Fndns Of Engr II	0.	25	Kingsbury, Taylor (Primary Instr)
TDEC 112 025	Math Fndns Of Engr II	0.	25	Durkin, Sean (Primary Instr)
TDEC 112 026	Math Fndns Of Engr II	0.	19	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 112 027	Math Fndns Of Engr II	0.	24	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 112 030	Math Fndns Of Engr II	0.	22	Isaacson, Brad (Primary Instr)
TDEC 112 05H	Math Fndns Of Engr II	0.	13	Reed, Robert (Primary Instr)
TDEC 112 19H	Math Fndns Of Engr II	0.	15	Reed, Robert (Primary Instr)
TDEC 112 A	Math Fndns Of Engr II	3.	172	Hicks, Robert (Primary Instr)
TDEC 112 B	Math Fndns Of Engr II	3.	143	Hicks, Robert (Primary Instr)
TDEC 112 C	Math Fndns Of Engr II	3.	123	Hicks, Robert (Primary Instr)
TDEC 112 D	Math Fndns Of Engr II-Honors	3.	49	Naber, Gregory (Primary Instr)
TDEC 114 001	Math Fndns Of Engr III	0.	18	Aafif, Amal (Primary Instr)
TDEC 114 002	Math Fndns Of Engr III	0.	22	Aafif, Amal (Primary Instr)
TDEC 114 003	Math Fndns Of Engr III	0.	24	McLeod, Douglas (Primary Instr)
TDEC 114 A	Math Fndns Of Engr III	3.	64	McLeod, Douglas (Primary Instr)

MATH 291 002	Complex & Vector Analy for Eng	0	13	McLeod, Douglas
MATH 291 003	Complex & Vector Analy for Eng	0	26	McLeod, Douglas
MATH 291 A	Complex & Vector Analy for Eng	4	62	McLeod, Douglas
MATH 301 001	Numeric.Solut Differential Equ	3	24	Greenfield, Pavel
MATH 311 701	Probability and Statistics I	4	19	McLeod, Douglas
MATH 312 001	Probability and Statistics II	4	27	Hitczenko, Pawel
MATH 312 002	Probability and Statistics II	4	15	Yu, Pok-Yin
MATH 312 002	Probability and Statistics II	4	15	Yu, Pok-Yin
MATH 312 003	Probability and Statistics II	4	28	Yu, Pok-Yin
MATH 316 001	Math App of Symbolic Software	3	18	Smith, Justin
MATH 402 001	Elements of Modern Analysis II	3	20	Smith, Justin
MATH 480 001	ST: Accelerated Calculus II	4	7	Boyer, Robert
MATH 498 001	ST: Linear Algebra prob in App	3	7	Woerdeman, Hugo
MATH 505 501	Principles of Analysis I	3	14	Boyer, Robert
MATH 511 501	Applied Prob & Statistics II	3	20	Hitczenko, Pawel
MATH 520 501	Numerical Analysis I	3	22	Greenfield, Pavel
MATH 534 501	Abstract Algebra II	3	19	Schmutz, Eric
MATH 623 501	Ordinary Diff Equations I	3	12	Medvedev, Georgi
MATH 633 501	Real Variables I	3	8	Smith, Justin
MATH 699 001	Intro to Discrete Dyn Syst	3	1	Medvedev, Georgi
MATH 699 002	Applied Math & Computation	3	1	Medvedev, Georgi
MATH 997 001	Research		1	Woerdeman, Hugo
MATH 997 002	Research	3	0	Hitczenko, Pawel
MATH 997 003	Research	3	1	Medvedev, Georgi

MATH 102 027	Introduction to Analysis II	4	29	Steuber, Jeanne
MATH 102 027	Introduction to Analysis II	4	29	Steuber, Jeanne
MATH 102 027	Introduction to Analysis II	4	29	Steuber, Jeanne
MATH 102 028	Introduction to Analysis II	4	29	Favocci, Raymond
MATH 102 029	Introduction to Analysis II	4	28	Mozeff, Marna
MATH 102 A	Introduction to Analysis II	4	114	Rickert, Adam
MATH 102 B	Introduction to Analysis II	4	108	Rickert, Adam
MATH 102 D	Introduction to Analysis II	4	107	Rickert, Adam
MATH 110 001	Precalculus	3	23	Catral, Minerva
MATH 121 001	Calculus I	4	15	Donnelly, James
MATH 121 002	Calculus I	4	35	Donnelly, James
MATH 121 501	Calculus I	4	28	Kheyfets, Boris
MATH 121 701	Calculus I	4	10	Kheyfets, Boris
MATH 122 001	Calculus II	0	13	Yuen, Ming Kwan
MATH 122 003	Calculus II	0	24	Yuen, Ming Kwan
MATH 122 004	Calculus II	0	20	Minster, Angela
MATH 122 008	Calculus II	0	17	Minster, Angela
MATH 122 009	Calculus II	0	14	Yuen, Ming Kwan
MATH 122 501	Calculus II	4	1	Kheyfets, Boris
MATH 122 701	Calculus II	4	7	Kheyfets, Boris
MATH 122 A	Calculus II	4	51	Naber, Gregory
MATH 122 B	Calculus II	4	36	Naber, Gregory
MATH 123 001	Calculus III	4	22	Donnelly, James
MATH 123 501	Calculus III	4	28	Koublanova, Elena
MATH 123 701	Calculus III	4	8	Koublanova, Elena
MATH 180 001	Discrete Computat Struct	4	15	Sheng, Li
MATH 180 701	Discrete Computat Struct	4	23	McLeod, Douglas
MATH 181 105	Mathematical Analysis I	3	16	Carlin, Lawrence
MATH 181 681	Mathematical Analysis I	3	14	Shuman, Charles
MATH 181 701	Mathematical Analysis I	3	29	Gordon, June
MATH 181 900	Mathematical Analysis I	3	22	Rickert, Adam
MATH 182 701	Mathematical Analysis II	3	30	Gordon, June
MATH 182 702	Mathematical Analysis II	3	18	Zefelippo, Sergio
MATH 183 701	Mathematical Analysis III	3	21	Zefelippo, Sergio
MATH 183 900	Mathematical Analysis III	3	17	Mozeff, Marna
MATH 200 001	Calculus IV	4	20	Sheng, Li
MATH 200 501	Calculus IV	4	16	Koublanova, Elena
MATH 200 701	Calculus IV	4	10	Koublanova, Elena
MATH 201 001	Linear Algebra	4	29	Schmutz, Eric
MATH 201 002	Linear Algebra	4	25	Kaliuzhnyi-Verbovetskyi, Dmytro
MATH 201 003	Linear Algebra	4	29	Kaliuzhnyi-Verbovetskyi, Dmytro
MATH 210 001	Differential Equations	4	26	Medvedev, Georgi
MATH 221 001	Discrete Mathematics	3	34	Falco, Daryl
MATH 221 002	Discrete Mathematics	3	31	Falco, Daryl
MATH 239 001	Intermediate Calculus	4	6	Perlstadt, Marci
MATH 261 701	Linear Algebra	3	28	Lampone, Leo
MATH 262 701	Differential Equations	3	9	Lampone, Leo
MATH 279 001	ST: Math Workshop	1	14	Mozeff, Marna
MATH 279 002	ST: Math Workshop	1	17	Mozeff, Marna
MATH 279 501	ST: Math Workshop	1	20	Mozeff, Marna
MATH 291 001	Complex & Vector Analy for Eng	0	23	McLeod, Douglas

Fall 2005				
Course	Course Title	Credit Hrs	Enrl	Instructor
TDEC 110 002	Math Fndns Engr I	0.	25	Immordino, Robert (Primary Instr)
TDEC 110 003	Math Fndns Engr I	0.	24	Murtha, Steven (Primary Instr)
TDEC 110 004	Math Fndns Engr I	0.	22	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 110 006	Math Fndns Engr I	0.	24	Murtha, Steven (Primary Instr)
TDEC 110 007	Math Fndns Engr I	0.	24	Immordino, Robert (Primary Instr)
TDEC 110 008	Math Fndns Engr I	0.	24	Immordino, Robert (Primary Instr)
TDEC 110 009	Math Fndns Engr I	0.	20	Murtha, Steven (Primary Instr)
TDEC 110 010	Math Fndns Engr I	0.	24	Kose, Emek (Primary Instr)
TDEC 110 011	Math Fndns Engr I	0.	20	Kose, Emek (Primary Instr)
TDEC 110 014	Math Fndns Engr I	0.	24	Kingsbury, Taylor (Primary Instr)
TDEC 110 015	Math Fndns Engr I	0.	21	Immordino, Robert (Primary Instr)
TDEC 110 016	Math Fndns Engr I	0.	21	Isaacson, Brad (Primary Instr)
TDEC 110 017	Math Fndns Engr I	0.	17	Kingsbury, Taylor (Primary Instr)
TDEC 110 018	Math Fndns Engr I	0.	10	Durkin, Sean (Primary Instr)
TDEC 110 01H	Math Fndns Engr I	0.	20	Maahs, Ken (Primary Instr)
TDEC 110 020	Math Fndns Engr I	0.	19	Kose, Emek (Primary Instr)
TDEC 110 021	Math Fndns Engr I	0.	21	Immordino, Robert (Primary Instr)
TDEC 110 022	Math Fndns Engr I	0.	21	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 110 023	Math Fndns Engr I	0.	24	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 110 025	Math Fndns Engr I	0.	24	Durkin, Sean (Primary Instr)
TDEC 110 026	Math Fndns Engr I	0.	24	Kingsbury, Taylor (Primary Instr)
TDEC 110 027	Math Fndns Engr I	0.	25	Immordino, Robert (Primary Instr)
TDEC 110 029	Math Fndns Engr I	0.	24	Isaacson, Brad (Primary Instr)
TDEC 110 030	Math Fndns Engr I	0.	23	Isaacson, Brad (Primary Instr)
TDEC 110 05H	Math Fndns Engr I	0.	14	Reed, Robert (Primary Instr)
TDEC 110 13H	Math Fndns Engr I	0.	19	Reed, Robert (Primary Instr)
TDEC 110 19H	Math Fndns Engr I	0.	21	Maahs, Ken (Primary Instr)
TDEC 110 A	Math Fndns Engr I	3.	191	Immordino, Robert (Primary Instr)
TDEC 110 B	Math Fndns Engr I	3.	131	Immordino, Robert (Primary Instr)
TDEC 110 C	Math Fndns Engr I	3.	183	Immordino, Robert (Primary Instr)
TDEC 110 D	Math Fndns Engr I-Honors	3.	74	Naber, Gregory (Primary Instr)
TDEC 112 001	Math Fndns Of Engr II	0.	17	McLeod, Douglas (Primary Instr)
TDEC 112 002	Math Fndns Of Engr II	0.	12	Aafif, Amal (Primary Instr)
TDEC 112 003	Math Fndns Of Engr II	0.	10	Aafif, Amal (Primary Instr)
TDEC 112 005	Math Fndns Of Engr II	0.	18	Falco, Daryl (Primary Instr)
TDEC 112 A	Math Fndns Of Engr II	3.	39	McLeod, Douglas (Primary Instr)
TDEC 112 B	Math Fndns Of Engr II	3.	18	Falco, Daryl (Primary Instr)

MATH 311 002	Probability and Statistics I	4	30	Henry, Patricia
MATH 311 003	Probability and Statistics I	4	18	Yu, Pok-Yin
MATH 318 001	Math App of Stat Software	3	9	Sheng, Li
MATH 331 001	Abstract Algebra I	4	24	Yu, Pok-Yin
MATH 401 001	Elements of Modern Analysis I	3	28	Smith, Justin
MATH 480 001	ST: Accelerated Calculus I	4	8	Boyer, Robert
MATH 480 002	ST: Math Competition Seminar	1	3	Woerdeman, Hugo
MATH 504 501	Linear Algebra and Analysis	3	25	Woerdeman, Hugo
MATH 510 501	Applied Prob.& Statistics I	3	24	Hitczenko, Pawel
MATH 533 501	Abstract Algebra I	3	16	Schmutz, Eric
MATH 680 501	ST: Differentiable Manifolds	3	7	Naber, Gregory
MATH 680 502	ST: Intro to Comp Neuroscience	3	4	Medvedev, Georgi
MATH 699 001	Topics in Advanced Probability	3	1	Hitczenko, Pawel
MATH 997 001	Research	3	2	Medvedev, Georgi
MATH 997 002	Research	3	1	Woerdeman, Hugo

MATH 101 B	Introduction to Analysis I	4	78	Rickert, Adam
MATH 101 C	Introduction to Analysis I	4	99	Fields, Ewaugh
MATH 101 D	Introduction to Analysis I	4	50	Rickert, Adam
MATH 110 001	Precalculus	3	30	McLeod, Douglas
MATH 110 003	Precalculus	3	27	McLeod, Douglas
MATH 121 001	Calculus I	0	12	Minster, Angela (Primary) Falco, Daryl
MATH 121 002	Calculus I	0	27	Binder, Kyle (Primary) Falco, Daryl
MATH 121 006	Calculus I	0	29	Yuen, Ming Kwan
MATH 121 008	Calculus I	0	8	Minster, Angela
MATH 121 010	Calculus I	0	17	Yuen, Ming Kwan
MATH 121 011	Calculus I	0	27	Binder, Kyle (Primary) Falco, Daryl
MATH 121 501	Calculus I	4	5	Gilman, Harold
MATH 121 701	Calculus I	4	15	Gilman, Harold
MATH 121 A	Calculus I	4	72	Falco, Daryl
MATH 121 B	Calculus I	4	45	Naber, Gregory
MATH 122 001	Calculus II	4	21	Donnelly, James
MATH 122 501	Calculus II (Meets with MATH 122/701)	4	23	Koublanova, Elena
MATH 122 701	Calculus II (Meets with MATH 122/501)	4	4	Koublanova, Elena
MATH 123 001	Calculus III	4	29	Boyer, Robert
MATH 123 501	Calculus III	4	24	Gilman, Harold
MATH 123 701	Calculus III	4	10	Gilman, Harold
MATH 181 701	Mathematical Analysis I	3	26	Gordon, June
MATH 181 702	Mathematical Analysis I	3	24	Gordon, June
MATH 182 690	Mathematical Analysis II	3	10	Shuman, Charles
MATH 182 701	Mathematical Analysis II	3	23	Kheyfets, Boris
MATH 182 900	Mathematical Analysis II	3	15	Rickert, Adam
MATH 183 701	Mathematical Analysis III	3	23	Zefelippo, Sergio
MATH 200 001	Calculus IV	4	23	Donnelly, James
MATH 200 002	Calculus IV	4	23	Donnelly, James
MATH 200 501	Calculus IV	4	16	Koublanova, Elena
MATH 200 701	Calculus IV	4	10	Koublanova, Elena
MATH 201 001	Linear Algebra	4	20	Gollwitzer, Herman
MATH 201 002	Linear Algebra	4	22	Kaliuzhnyi-Verbovetskyi, Dmytro
MATH 210 001	Differential Equations	4	17	Medvedev, Georgi
MATH 220 001	Techniques Of Math Proof	3	19	Perlstadt, Marci
MATH 220 002	Techniques Of Math Proof	3	12	Catral, Minerva
MATH 221 001	Discrete Mathematics	3	14	Schmutz, Eric
MATH 221 701	Discrete Mathematics	3	13	Kheyfets, Boris
MATH 261 701	Linear Algebra	3	24	Lampone, Leo
MATH 262 701	Differential Equations	3	17	Lampone, Leo
MATH 279 001	ST: Stats for Everyday	3	24	Kyriacou, Elaine
MATH 279 002	ST: Stats for Everyday	3	24	Kyriacou, Elaine
MATH 279 003	ST: Math Workshop	1	11	Mozeff, Marna
MATH 279 005	ST: Math Workshop	1	7	Mozeff, Marna
MATH 290 001	Linear Modeling for Engineers	0	26	Dolgopolsky, Alexander
MATH 290 002	Linear Modeling for Engineers	0	24	Gollwitzer, Herman
MATH 290 003	Linear Modeling for Engineers	0	26	Gollwitzer, Herman
MATH 290 004	Linear Modeling for Engineers	0	26	Dolgopolsky, Alexander
MATH 290 A	Linear Modeling for Engineers	4	102	Gollwitzer, Herman
MATH 300 001	Numerical Analysis	4	23	Greenfield, Pavel
MATH 311 001	Probability and Statistics I	4	24	Hitczenko, Pawel

Winter 2006				
Course	**Course Title**	**Credit Hrs**	**Enrl**	**Instructor**
MATH 100 001	Fundamentals of Mathematics	3	28	Smith, Judy
MATH 100 002	Fundamentals of Mathematics	3	23	Smith, Judy
MATH 100 003	Fundamentals of Mathematics	3	24	Smith, Judy
MATH 100 004	Fundamentals of Mathematics	3	18	Catral, Minerva
MATH 100 005	Fundamentals of Mathematics	3	18	Cataline, Jodi
MATH 100 900	Fundamentals of Mathematics	3	8	Mozeff, Marna
MATH 101 001	Introduction to Analysis I	0	22	Yang, Kathy (Primary) Perlstadt, Marci
MATH 101 002	Introduction to Analysis I	0	21	Hummel, William (Primary) Perlstadt, Marci
MATH 101 003	Introduction to Analysis I	0	21	Yang, Kathy (Primary) Perlstadt, Marci
MATH 101 005	Introduction to Analysis I	0	23	Hummel, William (Primary) Perlstadt, Marci
MATH 101 007	Introduction to Analysis I	0	26	Yang, Kathy (Primary) Perlstadt, Marci
MATH 101 008	Introduction to Analysis I	0	22	Hummel, William (Primary) Perlstadt, Marci
MATH 101 023	Introduction to Analysis I	4	26	Kyriacou, Elaine
MATH 101 023	Introduction to Analysis I	4	26	Kyriacou, Elaine
MATH 101 023	Introduction to Analysis I	4	26	Kyriacou, Elaine
MATH 101 025	Introduction to Analysis I	4	25	Kyriacou, Elaine
MATH 101 026	Introduction to Analysis I	4	27	Dolgopolsky, Alexander
MATH 101 027	Introduction to Analysis I	4	29	Muscatell, James
MATH 101 028	Introduction to Analysis I	4	25	Dolgopolsky, Alexander
MATH 101 029	Introduction to Analysis I	4	29	Muscatell, James
MATH 101 030	Introduction to Analysis I	4	20	Dolgopolsky, Alexander
MATH 101 031	Introduction to Analysis I	4	29	Muscatell, James
MATH 101 033	Introduction to Analysis I	4	13	Kyriacou, Elaine
MATH 101 A	Introduction to Analysis I	4	65	Perlstadt, Marci
MATH 101 B	Introduction to Analysis I	4	70	Perlstadt, Marci
MATH 102 001	Introduction to Analysis II	0	30	Rickert, Adam
MATH 102 002	Introduction to Analysis II	0	26	Matulis, John
MATH 102 003	Introduction to Analysis II	0	27	Matulis, John
MATH 102 004	Introduction to Analysis II	0	29	Jiang, Yanan
MATH 102 009	Introduction to Analysis II	0	28	Jiang, Yanan
MATH 102 010	Introduction to Analysis II	0	26	Zhuravytska, Svitlana
MATH 102 011	Introduction to Analysis II	0	26	Catral, Minerva
MATH 102 012	Introduction to Analysis II	0	29	Jiang, Yanan
MATH 102 013	Introduction to Analysis II	0	24	Zhuravytska, Svitlana
MATH 102 014	Introduction to Analysis II	0	28	Zhuravytska, Svitlana
MATH 102 015	Introduction to Analysis II	0	29	Matulis, John
MATH 102 016	Introduction to Analysis II	0	27	Rickert, Adam
MATH 102 017	Introduction to Analysis II	4	28	Steuber, Jeanne
MATH 102 018	Introduction to Analysis II	4	29	Hamilton, James
MATH 102 018	Introduction to Analysis II	4	29	Hamilton, James
MATH 102 019	Introduction to Analysis II	4	29	Hamilton, James
MATH 102 020	Introduction to Analysis II	4	30	Favocci, Raymond
MATH 102 021	Introduction to Analysis II	4	31	Favocci, Raymond
MATH 102 022	Introduction to Analysis II	4	25	Odintsova, Oksana
MATH 102 023	Introduction to Analysis II	4	30	Steuber, Jeanne
MATH 102 024	Introduction to Analysis II	4	31	Odintsova, Oksana
MATH 102 025	Introduction to Analysis II	4	28	Odintsova, Oksana
MATH 102 026	Introduction to Analysis II	4	27	Mozeff, Marna

200535				
Course	**Course Title**	**Credit Hrs**	**Enr**	**Instructor**
MATH 100 900	Fundamentals of Mathematics	3	15	Mozeff, Marna
MATH 100 901	Fundamentals of Mathematics	3	14	Mozeff, Marna
MATH 101 001	Introduction to Analysis I	0	24	Hummel, William
MATH 101 002	Introduction to Analysis I	0	10	Kyriacou, Elaine
MATH 101 003	Introduction to Analysis I	0	27	Hummel, William
MATH 101 004	Introduction to Analysis I	0	23	Kyriacou, Elaine
MATH 101 007	Introduction to Analysis I	0	22	Hummel, William
MATH 101 010	Introduction to Analysis I	4	18	Steuber, Jeanne
MATH 101 011	Introduction to Analysis I	4	21	Steuber, Jeanne
MATH 101 013	Introduction to Analysis I	4	12	Steuber, Jeanne
MATH 101 014	Introduction to Analysis I	4	11	Dolgopolsky, Alexander
MATH 101 015	Introduction to Analysis I	4	14	Dolgopolsky, Alexander
MATH 101 900	Introduction to Analysis I	4	8	Yang, Kathy
MATH 101 A	Introduction to Analysis I	4	71	Kyriacou, Elaine
MATH 101 B	Introduction to Analysis I	4	35	Kyriacou, Elaine
MATH 102 006	Introduction to Analysis II	0	10	Coppola, John
MATH 102 007	Introduction to Analysis II	0	17	Zhuravytska, Svitlana
MATH 102 008	Introduction to Analysis II	0	9	Zhuravytska, Svitlana
MATH 102 010	Introduction to Analysis II	0	23	Matulis, John
MATH 102 011	Introduction to Analysis II	0	12	Matulis, John
MATH 102 012	Introduction to Analysis II	0	7	Matulis, John
MATH 102 014	Introduction to Analysis II	0	20	Coppola, John
MATH 102 015	Introduction to Analysis II	0	12	Zhuravytska, Svitlana
MATH 102 018	Introduction to Analysis II	4	16	Odintsova, Oksana
MATH 102 019	Introduction to Analysis II	4	23	Mozeff, Marna
MATH 102 021	Introduction to Analysis II	4	25	Odintsova, Oksana
MATH 102 023	Introduction to Analysis II	4	29	Muscatell, James
MATH 102 024	Introduction to Analysis II	4	29	Muscatell, James
MATH 102 025	Introduction to Analysis II	4	24	Favocci, Raymond
MATH 102 026	Introduction to Analysis II	4	23	Favocci, Raymond
MATH 102 027	Introduction to Analysis II	4	30	Muscatell, James
MATH 102 028	Introduction to Analysis II	4	17	Favocci, Raymond
MATH 102 B	Introduction to Analysis II	4	36	Perlstadt, Marci
MATH 102 C	Introduction to Analysis II	4	38	Perlstadt, Marci
MATH 102 D	Introduction to Analysis II	4	36	Perlstadt, Marci
MATH 110 701	Precalculus	3	11	Gao, Ji
MATH 119 001	Mathematics For Design	0	29	Yang, Kathy (Primary) Rickert, Adam
MATH 119 002	Mathematics For Design	0	30	Yang, Kathy (Primary) Rickert, Adam
MATH 119 003	Mathematics For Design	0	30	Minster, Angela (Primary) Rickert, Adam
MATH 119 004	Mathematics For Design	0	29	Minster, Angela (Primary) Rickert, Adam
MATH 119 005	Mathematics For Design	0	12	Yang, Kathy (Primary) Rickert, Adam
MATH 119 006	Mathematics For Design	0	30	Rickert, Adam
MATH 119 007	Mathematics For Design	0	25	Yang, Kathy (Primary) Rickert, Adam
MATH 119 008	Mathematics For Design	0	21	Jiang, Yanan (Primary) Rickert, Adam
MATH 119 009	Mathematics For Design	0	27	Yang, Kathy (Primary) Rickert, Adam
MATH 119 010	Mathematics For Design	0	29	Jiang, Yanan (Primary) Rickert, Adam
MATH 119 011	Mathematics For Design	0	29	Jiang, Yanan (Primary) Rickert, Adam
MATH 119 012	Mathematics For Design	0	21	Rickert, Adam
MATH 119 A	Mathematics For Design	4	118	Rickert, Adam

MATH 119 B	Mathematics For Design	4	109	Rickert, Adam
MATH 119 C	Mathematics For Design	4	85	Rickert, Adam
MATH 121 001	Calculus I	4	6	Donnelly, James
MATH 121 501	Calculus I	4	19	Kheyfets, Boris
MATH 121 701	Calculus I	4	6	Kheyfets, Boris
MATH 122 001	Calculus II	4	27	Donnelly, James
MATH 122 002	Calculus II	4	24	Donnelly, James
MATH 122 501	Calculus II	4	12	Kheyfets, Boris
MATH 122 701	Calculus II	4	6	Kheyfets, Boris
MATH 123 002	Calculus III	0	11	Yuen, Ming Kwan
MATH 123 003	Calculus III	0	21	Yuen, Ming Kwan
MATH 123 006	Calculus III	0	9	Yuen, Ming Kwan
MATH 123 007	Calculus III	0	10	Yuen, Ming Kwan
MATH 123 501	Calculus III	4	16	Gilman, Harold
MATH 123 701	Calculus III	4	10	Gilman, Harold
MATH 123 A	Calculus III	4	25	Naber, Gregory
MATH 123 B	Calculus III	4	26	Naber, Gregory
MATH 180 001	Discrete Computat Struct	4	33	Greenfield, Pavel
MATH 180 002	Discrete Computat Struct	4	28	Schmutz, Eric
MATH 181 701	Mathematical Analysis I	3	30	Gordon, June
MATH 182 105	Mathematical Analysis II	3	10	Carlin, Lawrence
MATH 182 701	Mathematical Analysis II	3	16	Matulis, John
MATH 182 702	Mathematical Analysis II	3	17	Muscatell, James
MATH 182 900	Mathematical Analysis II	3	22	Rickert, Adam
MATH 183 105	Mathematical Analysis III	3	9	Ladha, Kapil
MATH 183 701	Mathematical Analysis III	3	20	Zefelippo, Sergio
MATH 200 001	Calculus IV	4	13	Boyer, Robert
MATH 200 01H	Calculus IV	4	13	Boyer, Robert
MATH 200 501	Calculus IV	4	17	Gilman, Harold
MATH 200 701	Calculus IV	4	9	Gilman, Harold
MATH 201 001	Linear Algebra	4	27	Kaliuzhnyi-Verbovetskyi, Dmytro
MATH 201 002	Linear Algebra	4	29	Schmutz, Eric
MATH 221 001	Discrete Mathematics	3	13	Sheng, Li
MATH 239 001	Intermediate Calculus	4	40	Smith, Justin
MATH 239 002	Intermediate Calculus	4	20	Goh, William
MATH 261 701	Linear Algebra	3	21	Lampone, Leo
MATH 262 701	Differential Equations	3	13	Lampone, Leo
MATH 290 001	Linear Modeling for Engineers	0	27	Aafif, Amal
MATH 290 002	Linear Modeling for Engineers	0	25	Aafif, Amal
MATH 290 003	Linear Modeling for Engineers	0	26	Catral, Minerva
MATH 290 004	Linear Modeling for Engineers	0	27	Catral, Minerva
MATH 290 005	Linear Modeling for Engineers	0	22	Catral, Minerva
MATH 290 006	Linear Modeling for Engineers	0	26	Kose, Emek
MATH 290 008	Linear Modeling for Engineers	0	24	Aafif, Amal
MATH 290 A	Linear Modeling for Engineers	4	105	Catral, Minerva
MATH 290 B	Linear Modeling for Engineers	4	72	Catral, Minerva
MATH 300 001	Numerical Analysis	4	25	Greenfield, Pavel
MATH 311 001	Probability and Statistics I	4	29	Henry, Patricia
MATH 311 002	Probability and Statistics I	4	12	Goh, William
MATH 311 003	Probability and Statistics I	4	21	Yu, Pok-Yin
MATH 312 701	Probability and Statistics II	4	11	Gao, Ji

MATH 323 001	Partial Differential Equations	4	10	Guo, Yixin
MATH 450 001	Introduction to Graph Theory	3	8	Sheng, Li
MATH 499 001	Markov Chains	4	1	Schmutz, Eric
MATH 506 501	Principles of Analysis II	3	10	Boyer, Robert
MATH 512 501	Applied Prob & Statistics III	3	16	Hitczenko, Pawel
MATH 624 501	Ordinary Diff Equations II	3	5	Medvedev, Georgi
MATH 634 501	Real Variables II	3	3	Smith, Justin
MATH 680 501	ST:Wavelets & Comp Signal Proc	3	9	Yu, Pok-Yin
MATH 680 502	ST: Analysis of Algorithms	3	26	Hitczenko, Pawel
MATH 699 001	Intro to Algebraic Topology	3	3	Naber, Gregory
MATH 997 001	Research	3	1	Medvedev, Georgi
MATH 998 001	Ph.D. Dissertation	1	1	Boyer, Robert

Spring 2006				
Course	Course Title	Credit Hrs	Enrl	Instructor
TDEC 110 001	Math Fndns Engr I	0.	14	Falco, Daryl (Primary Instr)
TDEC 110 002	Math Fndns Engr I	0.	9	Falco, Daryl (Primary Instr)
TDEC 110 A	Math Fndns Engr I	3.	23	Falco, Daryl (Primary Instr)
TDEC 112 001	Math Fndns Of Engr II	0.	20	Maahs, Ken (Primary Instr)
TDEC 112 002	Math Fndns Of Engr II	0.	18	Maahs, Ken (Primary Instr)
TDEC 112 003	Math Fndns Of Engr II	0.	16	Dolgopolsky, Alexander (Primary Instr)
TDEC 112 004	Math Fndns Of Engr II	0.	21	Maahs, Ken (Primary Instr)
TDEC 112 005	Math Fndns Of Engr II	0.	12	Dolgopolsky, Alexander (Primary Instr)
TDEC 112 006	Math Fndns Of Engr II	0.	16	Price, Elena (Primary Instr)
TDEC 112 A	Math Fndns Of Engr II	3.	103	Falco, Daryl (Primary Instr)
TDEC 114 003	Math Fndns Of Engr III	0.	22	Durkin, Sean (Primary Instr)
TDEC 114 006	Math Fndns Of Engr III	0.	23	Odintsova, Oksana (Primary Instr)
TDEC 114 007	Math Fndns Of Engr III	0.	25	Immordino, Robert (Primary Instr)
TDEC 114 008	Math Fndns Of Engr III	0.	26	Murtha, Steven (Primary Instr)
TDEC 114 009	Math Fndns Of Engr III	0.	20	Murtha, Steven (Primary Instr)
TDEC 114 010	Math Fndns Of Engr III	0.	25	Isaacson, Brad (Primary Instr)
TDEC 114 011	Math Fndns Of Engr III	0.	25	Isaacson, Brad (Primary Instr)
TDEC 114 012	Math Fndns Of Engr III	0.	24	Immordino, Robert (Primary Instr)
TDEC 114 014	Math Fndns Of Engr III	0.	25	Kingsbury, Taylor (Primary Instr)
TDEC 114 015	Math Fndns Of Engr III	0.	24	Murtha, Steven (Primary Instr)
TDEC 114 016	Math Fndns Of Engr III	0.	23	Isaacson, Brad (Primary Instr)
TDEC 114 017	Math Fndns Of Engr III	0.	25	Kingsbury, Taylor (Primary Instr)
TDEC 114 018	Math Fndns Of Engr III	0.	19	Medvedev, Georgi (Primary Instr)
TDEC 114 01H	Math Fndns Of Engr III	0.	15	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 114 020	Math Fndns Of Engr III	0.	25	Immordino, Robert (Primary Instr)
TDEC 114 021	Math Fndns Of Engr III	0.	25	Medvedev, Georgi (Primary Instr)
TDEC 114 022	Math Fndns Of Engr III	0.	25	Immordino, Robert (Primary Instr)
TDEC 114 023	Math Fndns Of Engr III	0.	24	Immordino, Robert (Primary Instr)
TDEC 114 025	Math Fndns Of Engr III	0.	25	Kingsbury, Taylor (Primary Instr)
TDEC 114 027	Math Fndns Of Engr III	0.	24	Durkin, Sean (Primary Instr)
TDEC 114 030	Math Fndns Of Engr III	0.	11	Murtha, Steven (Primary Instr)
TDEC 114 05H	Math Fndns Of Engr III	0.	17	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 114 19H	Math Fndns Of Engr III	0.	9	Rodriguez-Martin, Salvador (Primary Instr)
TDEC 114 A	Math Fndns Of Engr III	3.	171	Immordino, Robert (Primary Instr)
TDEC 114 B	Math Fndns Of Engr III	3.	164	Immordino, Robert (Primary Instr)
TDEC 114 C	Math Fndns Of Engr III	3.	129	Immordino, Robert (Primary Instr)
TDEC 114 D	Math Fndns Of Engr III-Honors	3.	42	Naber, Gregory (Primary Instr)

200545					
Course	Course Title	Credit Hrs	Enrl	Schd Desc	Instructor
MATH 100 001	Fundamentals of Mathematics	3	21	Lecture	Favocci, Raymond
MATH 100 002	Fundamentals of Mathematics	3	20	Lecture	Favocci, Raymond
MATH 100 003	Fundamentals of Mathematics	3	21	Lecture	Badshah, Muffasir
MATH 101 900	Introduction to Analysis I	4	17	Online WEBCT	Mozeff, Marna
MATH 102 001	Introduction to Analysis II	4	27	Lecture	Murtha, Steven
MATH 102 501	Introduction to Analysis II	4	33	Lecture	Muscatell, James
MATH 110 001	Precalculus	3	24	Lecture	Badshah, Muffasir
MATH 110 701	Precalculus	3	6	Lecture	Badshah, Muffasir
MATH 122 501	Calculus II	4	8	Lecture	Kingsbury, Taylor
MATH 123 501	Calculus III	4	12	Lecture	Smith, Justin
MATH 123 701	Calculus III	4	1	Lecture	Smith, Justin
MATH 181 105	Mathematical Analysis I	3	8	Lecture	Carlin, Lawrence
MATH 181 701	Mathematical Analysis I	3	20	Lecture	Gordon, June
MATH 181 900	Mathematical Analysis I	3	21	Online-DeL	Rickert, Adam (Primary) Mozeff, Marna
MATH 182 701	Mathematical Analysis II	3	15	Lecture	Rodriguez-Martin, Salvador
MATH 183 701	Mathematical Analysis III	3	25	Lecture	Gordon, June
MATH 183 900	Mathematical Analysis III	3	13	Online-DeL	Mozeff, Marna (Primary) Rickert, Adam
MATH 200 003	Calculus IV	4	13	Lecture	Sheng, Li
MATH 201 001	Linear Algebra	4	33	Lecture	Catral, Minerva
MATH 201 003	Linear Algebra	4	23	Lecture	Catral, Minerva
MATH 221 001	Discrete Mathematics	3	15	Lecture	Falco, Daryl
MATH 221 003	Discrete Mathematics	3	19	Lecture	Falco, Daryl
MATH 221 701	Discrete Mathematics	3	17	Lecture	Gilman, Harold
MATH 261 701	Linear Algebra	3	24	Lecture	Lampone, Leo
MATH 262 701	Differential Equations	3	25	Lecture	Lampone, Leo
MATH 279 001	ST: Math Workshop - 100	0	21	Special Topics-Lecture	Favocci, Raymond
MATH 279 002	ST: Math Workshop - 100	0	20	Special Topics-Lecture	Favocci, Raymond
MATH 279 003	ST: Math Workshop - 100	0	21	Special Topics-Lecture	Favocci, Raymond
MATH 279 004	ST: Math Workshop - 110	0	24	Special Topics-Lecture	Badshah, Muffasir
MATH 290 701	Linear Modeling for Engineers	4	36	Lecture	Smith, Justin
MATH 291 001	Complex & Vector Analy for Eng	0	28	Recitation/Discussion	Rodriguez-Martin, Salvador Goh, William
MATH 291 002	Complex & Vector Analy for Eng	0	32	Recitation/Discussion	Rodriguez-Martin, Salvador Goh, William
MATH 291 A	Complex & Vector Analy for Eng	4	60	Lecture	Goh, William
MATH 305 001	Intro Optimization Theory	4	14	Lecture	Sheng, Li
MATH 312 002	Probability and Statistics II	4	26	Lecture	Rickert, Adam
MATH 312 003	Probability and Statistics II	4	16	Lecture	Goh, William
MATH 499 001	Techniques of Math Proof	3	1	Independent/Directed Study	Catral, Minerva

Spring 2006				
Course	Course Title	Credit Hrs	Enrl	All Instructors
ENGR 361 001	Stat Analysis of Engr Systems	0.	21	Scoles, Kevin
ENGR 361 002	Stat Analysis of Engr Systems	0.	22	Scoles, Kevin
ENGR 361 003	Stat Analysis of Engr Systems	0.	25	Eisenstein, Bruce
ENGR 361 004	Stat Analysis of Engr Systems	0.	18	Bartrand, Timothy
ENGR 361 A	Stat Analysis of Engr Systems	3.	86	Henry, Patricia

Summer 2006				
Course	Course Title	Credit Hrs	Enrl	Instructors
TDEC 112 701	Math Fndns Of Engr II	0.	12	Immordino, Robert
TDEC 112 A	Math Fndns Of Engr II	3.	12	Immordino, Robert
TDEC 114 701	Math Fndns Of Engr III	0.	23	Immordino, Robert
TDEC 114 702	Math Fndns Of Engr III	0.	21	Immordino, Robert
TDEC 114 A	Math Fndns Of Engr III	3.	44	Immordino, Robert

Drexel University Mathematics Department
Bachelor of Science Degrees Awarded 2005-2006

Christina Achampong
David Allen Becker**
Jenell C. Carmona
Tracey D. Cronin*
Sean T. Durkin**
Uma S. Ganti
Kristopher Ali Gilliam
Ji Yuan Guo
Sukhpal Kaur
Dana Alexis Milovcich
Angela Minster**
Patrick Allen Mulhern*
Derek Paul Nash
William Schappell
Craig Allen Schroeder***
Lauren M. Socha
Joseph Charles Suchma
Evan Andrew Sultanik
Joshua Patrick Teich*
Matthew Edward Thoman

*Cum Laude
**Magna cum Laude
*** Suma cum Laude

Drexel University Mathematics Department
Graduate Degrees Awarded 2005-2006

Peter B. James
Emek Kose
Jessica Lee Krain
Ken H. Maahs
Kevin James Sullivan
Quinn Carilda Thomas
Shiqiong Tong

Drexel University Research Day

The following posters were presented by students on Research Day, April 20

- ❖ **Yun Yoo:** "Multimodal regimes in systems close to a degenerate Andronov-Hopf bifurcation"
- ❖ **Emek Kose:** "Double-Mirror Catadioptric Sensors Which Are Rectifying"
- ❖ **Amal Aafif:** "Image Analysis using a Generalized Fourier Transform Approach"
- ❖ **Arvid Ramanujam:** "Regional Contribution of Muscle Shortening towards Volume Displacement in the Diaphragm of Dog"

Workshop on the Teaching of Linear Algebra

Saturday, March 25, 2006

Endorsed by: International Linear Algebra Society and SIAM

Linear Algebra Course Survey

Purpose

Today, in the midst of a computational revolution, the subject of Linear Algebra is more important than ever. As the focus of the scientific community is gradually shifting back to discrete models, education in Linear Algebra is singularly responsible for producing students who are prepared for the change upon entering the research arena and industry. The workshop will address modern challenges in the teaching of Linear Algebra and different ways to present the subject to a diverse audience. The workshop will provide an opportunity to interact with today's top experts.

Invited Speakers

- ❖ **Robert Busby** (Drexel University) "The Evolution of the Linear Algebra at Drexel University"
- ❖ **Peter Lax** (New York University) "Linear Algebra! (If you know Enough.")
- ❖ **Gilbert Strang** (Massachusetts Institute of Technology) "Linear Algebra: A Happy Chance to Apply Mathematics"
- ❖ **Frank Uhlig** (Auburn University) "Certain Dilemmas in our Teaching of Elementary Linear Algebra"

Discussion Panel
Panel Discussion: "Linear Algebra: Curricular and Instructional Issues"

- ❖ Moderator: David Lay (University of Maryland)
- ❖ Jane Day (San Jose University)
- ❖ Guershon Harel University of California, San Diego)
- ❖ David Hill (Temple University)
- ❖ Steven Leon (University of Massachusetts, Darmouth)

Contributed Talks

- ❖ **Jane Day** (San Jose University) Some Things I've Learned About Teaching"
- ❖ **Fuzhen Zhang** (Nova Southeastern University) "Teaching Linear Algebra as a Tutorial"
- ❖ **Roe Goodman** (Rutgers University) "Using Technology Offstage in Linear Algebra Courses"
- ❖ **Pavel Grinfeld** (Drexel University) "A Way to Introduce Tensors in a Linear Algebra Courses"

Posters

- ❖ **Herman Gollwitzer** (Drexel University) When 3 becomes n" and "Pomoting Algorithm Over Arithmetic"
- ❖ **Robert Mayans** (Fairleigh Dickinson University) "A Hypertext on Linear Algebra"
- ❖ **Asamoah Nkwanta** (Morgan State University) "Using Pascal's Arithmetic Triangle in a Linear Algebra Course"

Drexel University Mathematics Department
Reading Room Inauguration

One Wednesday, April 02 the Mathematics Department and Math-Bytes was proud to announce the opening of the brand new Mathematics Library and Reading Room in Korman 207A. Drs. Peter Castro, Charles Mode and Jet Wimp Foncannon had generously donated their book collections for the library and the department plans to collect more books every year as well as expand the space. SIAM has also been instrumental in developing this library and we hope they will lend the department their latest books and journals on a regular basis.

Albert Herr Teaching Assistance Award

Drexel's Department of Mathematics has established an endowed Teaching Assistant Award in memory of Albert Herr, a distinguished and much-admires faculty member for over thirty years. It is awarded annually to teaching assistance in the Mathematics Department. The first award was presented in the spring of 1997. Al's many friends, student, and colleagues will add to the fund so that this award will continue to be a worthy testament to Al's contributions to mathematics education.

The recipient of this year's award was Mr. Ken Maahs.

Employee Service Awards Ceremony

Tuesday, October 11, 2005

The Drexel University Employee Service Awards Ceremony was held on Tuesday, October 11, 2005 in the George D. Behrakis Grand Hall in the Creese Center Student Center. The following members of the Drexel Mathematics department were recognized for their service at Drexel University.

- ❖ **James W. Donnelly** — **Five Year Award Recipient**
- ❖ **Georgeanne Talarico** — **Five Year Award Recipient**
- ❖ **Adam Rickert** — **Fifteen Year Award Recipient**
- ❖ **Ronald Perline** — **Twenty Year Award Recipient**