J. ROBERT BUCHANAN

206 N President Ave
Apt D1
Lancaster, Pennsylvania 17603
(610) 743–3869, Cell: (717) 203-7790
J.Robert.Buchanan@comcast.net

Department of Mathematics
Millersville University
P.O. Box 1002
Millersville, Pennsylvania 17551–0302
(717) 871-7305, FAX: (717) 871–7948
Robert.Buchanan@millersville.edu

Research Field:

Differential equations, mathematical biology, mathematical modeling.

Educational Record:

North Carolina State University, Raleigh, North Carolina (1989–1993)
Doctor of Philosophy in Applied Mathematics

> Dissertation Title: Asymptotic Behavior of n–dimensional Systems of Ordinary Differential Equations of Kolmogorov–type
> Dr. J.F. Selgrade, adviser

North Carolina State University, Raleigh, North Carolina (1983–1985)
Master of Science in Applied Mathematics

Davidson College, Davidson, North Carolina (1979–1983)
Bachelor of Science in Physics

Professional Record:

08/2005 to present

Professor, Department of Mathematics, Millersville University, Millersville, PA

Teaching a 24 semester-hour per year load in a broad range of undergraduate mathematics courses with emphasis on mathematical biology, cryptography, financial mathematics, and other special topics in applied mathematics, research in differential equations, dynamical systems and mathematical modeling, development of distance and digital education courseware, WWW page development, development of components of the applied mathematics curriculum, and other service.

08/2000 to 07/2005

Associate Professor, Department of Mathematics, Millersville University, Millersville, PA

Teaching a 24 semester-hour per year load in a broad range of undergraduate mathematics courses, research in differential equations, dynamical systems and mathematical modeling, Linux system administration, development of distance and digital education courseware, WWW page development, development of components of the applied mathematics curriculum, and other service.

08/1995 to 07/2000

Assistant Professor, Department of Mathematics, Millersville University, Millersville, PA

Teaching a 24 semester-hour per year load to a broad range of undergraduate mathematics courses, research in ordinary differential equations and mathematical modeling, UNIX system administration, WWW page development, development of components of the applied mathematics curriculum, and other service.

07/1994 to 08/1995

Mathematician, National Institute of Environmental Health Sciences, RTP, NC

Pharmacokinetic modeling, risk assessment, scientific computation.

09/1993 to 03/1994

Mathematician, Applied Mathematics Incorporated, Gales Ferry, CT

Mathematical modeling, scientific computation, technical writing.

09/1993 to 12/1993

Visiting Assistant Professor, Mathematics Department, North Carolina State University, Raleigh, N.C.

Postdoctoral research in the area of active control of fluids.

08/1989 to 08/1993

Research and teaching assistant, Mathematics Department, North Carolina State University, Raleigh, N.C.

02/1986 to 08/1989

Mathematician in the computer science group, The Johns Hopkins University/Applied Physics Laboratory, Laurel, Maryland.

Consulting:

Crown Investments, LLC, Las Vegas, NV, USA

Mathematical and statistical modeling applied to parimutuel wagering, development of optimal wagering strategies, nonlinear numerical optimization, parameter estimation for models of horse and jockey performance.

Colloid, LLC, Harrisburg, PA, USA

Analysis of a novel cryptosystem, description of key space, detection and mitigation of potential vulnerabilities, description of potential cryptanalytic attacks, composition of technical article describing this new cryptosystem for publication.

Skills:

Original mathematical research especially in the area of mathematical biology, differential equations and dynamical systems. Scientific and numerical computation, analytical thinking, problem solving, technical writing, computing systems analysis, computing systems administration, and programming with Java, C/C++, FORTRAN, and *Mathematica*. Extensive experience using UNIX/Linux–based, macOS–based computers, parallel processing, and microcomputers.

Professional Societies:

Mathematical Association of America

American Mathematical Society

Society of Industrial and Applied Mathematics

American Association for the Advancement of Science

Society for Mathematical Biology

Awards:

NCSU Alumni Fellowship (1989–1990)

Maltbie Award (1991) for outstanding graduate teaching assistant

Phi Kappa Phi academic honor society

Books:

An Undergraduate Introduction to Financial Mathematics, J. Robert Buchanan, World Scientific Publishing Company, Hackensack, NJ, USA, ISBN: 981–256–637–6 (2006). The second edition appeared in print in 2008 with ISBN: 978-981–283–535–2. The third edition appeared in print in 2012 with ISBN: 978-981–4407–44–1.

A First Course in Partial Differential Equations, J. Robert Buchanan and Zhoude Shao, World Scientific Publishing Company, Hackensack, NJ, USA, ISBN: 978–981–3226–43–2 (2018).

Articles:

"The UberCrypt Framework: a New Approach in Cryptosystems", Joe Chiarella, Greg Mosher, and J. Robert Buchanan, (accepted Cryptology ePrint Archive, October 30, 2014, http://eprint.iacr.org/2014/894).

"A Model of Alcohol Epidemiology on Small World Networks", Robert A. Wilson, Richard J. Braun, John A. Pelesko, J. Robert Buchanan, and James P. Gleeson, *Journal of Studies on Alcohol*, Volume 67, Number 4, (July 2006), pp. 591–599.

"Turing Instability in Pioneer/Climax Species Interactions", J. Robert Buchanan, *Mathematical Biosciences*, Volume 194, Number 2, (April 2005), pp. 199-216.

"Forcing of Solutions to Reaction-Diffusion Equations With Applications to Population Models", *Rejecta Mathematica*, (submitted 2002).

"Discontinuous Forcing of Periodic Solutions in n–Dimensional $\mathcal{C}^1$ Vector Fields With Applications to Population Models," J.R. Buchanan, *Canadian Applied Mathematics Quarterly*, Volume 7, Number 4, (1999), pp. 345-362.

"Asymptotic Behavior of Two Interacting Pioneer/Climax Species," J.R. Buchanan, *Fields Institute Communications*, Volume 21, (1999), pp. 51-63.

"Discontinuous Forcing of Periodic Solutions in $\mathcal{C}^1$ Vector Fields With Applications to Population Models," J.R. Buchanan, *Natural Resource Modelling*, Volume 11, Number 1, (1998), pp. 5-19.

"Purpose and Guidelines for Toxicokinetic Studies Within the National Toxicology Program," J.R. Buchanan, L.T. Burka, R.L. Melnick, *Environmental Health Perspectives*, Volume 105, Number 5, (1997), pp. 468-471.

"Allometric Scaling in Pharmacokinetic Modeling," J.R. Buchanan, *Proceedings of the Second Biennial Symposium on Mathematical Modeling in the Undergraduate Curriculum*, Helen Skala ed., University of Wisconsin–La Crosse (1997).

"The Use of Data on Biologically Reactive Intermediates in Risk Assessment," J.R. Buchanan, C.J. Portier, in *Biological Reactive Intermediates V: Basic Mechanistic Research in Toxicology and Human Risk Assessment*, R. Snyder *et al.* eds., Plenum Publishing Corporation, New York, (1996), pp. 429-437.

"Discontinuous Forcing of $\mathcal{C}^1$ Vector Fields and Applications to Population Interaction Models," J.R. Buchanan, J.F. Selgrade, *Canadian Applied Mathematics Quarterly*, Volume 3, Number 2, (1995), pp. 113-135.

"Toxicokinetics (TK) of Gemfibrozil in Rats, Mice, and Hamsters," J.R. Buchanan, *et al.*, *The International Toxicologist*, (1995).

"Constant and periodic rate stocking and harvesting for Kolmogorov–type population interaction models," J.R. Buchanan, J.F. Selgrade, *Rocky Mountain Journal of Mathematics*, Volume 25, Number 1, (1995), pp. 67-85.

"Mathematical Modeling," J.R. Buchanan (co–authored with other participants of IMA Summer Program for Graduate Students), Institute for Mathematics and Its Applications, University of Minnesota, IMA Preprint Series #1021, September 1992.

"Automatic Target Recognition on the Connection Machine," J.R. Buchanan, *Johns Hopkins APL Technical Digest*, JHU/APL, Volume 10, Number 3, 1989.

"Naval Research Laboratory's Connection Machine Available for Data Parallel Processing," J.R. Buchanan, *McClure Center Magazine*, JHU/APL, Volume 6, Number 4, Winter 1988.

"APL's Array Processor — the QUEN," J.R. Buchanan, *McClure Center Magazine*, JHU/APL, Volume 6, Number 4, Winter 1988.

"The Second–Order Elastic Constants of AgBr from 77 to 300 K," J.R. Buchanan, R. Barber & L.S. Cain, *The Journal of Physics and Chemistry of Solids*, Volume 46, Number 2, (1985), pp. 249-252.

Reviews:

Book review of *Dynamics of Evolutionary Equations* by George R. Sell and Yuncheng You, Springer-Verlag, New York, 2002. Review appeared in the *Journal of Difference Equations and Applications*, Volume 9, Number 6 (2003), pp. 629-630.

Conferences:

Joint Mathematics Meetings 2018 (MAA, AMS, SIAM), San Diego, California, USA (01/10/2018–01/13/2018).

Careers in Mathematics Conference (EPaDel, PCTM) Millersville University, Millersville, Pennsylvania, USA (10/21/2017).

Eastern Pennsylvania Delaware (EPaDel) Spring Meeting, Muhlenberg College, Allentown, Pennsylvania, USA (04/02/2016).

Cengage Learning Mathematics and Statistics National Engagement Conference, "Elevate Thinking for Better Outcomes in Mathematics and Statistics Education", Tampa, Florida, USA (03/06/2014–03/07/2014).

Careers in Mathematics, Drexel University, Philadelphia, Pennsylvania, USA (11/23/2013).

Eastern Pennsylvania Delaware (EPaDel) Fall Meeting, Millersville University, Millersville, Pennsylvania, USA (10/27/2012).

First Joint Meeting of the American Mathematical Society and the Sociedad de Matemática de Chile, Pucón, Chile (12/15/2010–12/18/2010).

35th Annual Conference of the American Mathematical Association of Two-Year Colleges, Las Vegas, Nevada USA (11/12/2009–11/15/2009).

Careers in Mathematics, Millersville University, Millersville, Pennsylvania, USA (10/03/2009).

1048th American Mathematical Society meeting, North Carolina State University, Raleigh. North Carolina, USA (04/04/2009–04/05/2009).

SIAM Conference on Financial Mathematics and Engineering, New Brunswick, New Jersey, USA (11/21/2008–11/22/2008).

European Conference on Mathematical and Theoretical Biology, Dresden University of Technology, Dresden, Germany (07/18/2005–07/22/2005).

2005 Society for Industrial and Applied Mathematics Annual Meeting, New Orleans, Louisiana (07/11/2005–7/15/2005).

Symposium on Scientific Advances Related to Homeland Security, Millersville University of Pennsylvania, Millersville, Pennsylvania, USA (11/05/2004–11/06/2004)

Symposium in Mathematics, Penn State Harrisburg, Harrisburg, Pennsylvania, USA, (03/24/2004)

International Conference on Mathematical Biology 2003, University of Dundee, Dundee, Scotland, United Kingdom, (08/06/2003–08/09/2003)

Fourth Biomathematics Symposium, University of Cape Town, Cape Town, South Africa, (02/06/2003–02/07/2003).

VI Simposio Internacional de Matemáticas 2002, Punta Arenas, Tierra del Fuego, Chile, (11/12/2002–11/16/2002).

The 2nd Annual International on Advances in Service Learning Research Conference, Nashville, TN, USA (10/20/2002-10/22/2002).

The 22nd Annual South Eastern Atlantic Regional Conference on Differential Equations, University of Tennessee, Knoxville, TN, USA (10/11/2002–10/12/2002).

Encuentro 2000, Punta de Tralca, Chile, South America (10/26/2000-10/28/2000).

Pacific Rim Dynamical Systems Conference, Lahaina, Maui, Hawaii (8/9/2000–8/13/2000).

2000 Society for Industrial and Applied Mathematics Annual Meeting, Rio Grande, Puerto Rico (7/10/2000–7/14/2000).

1999 World Conference on Natural Resource Modelling, Saint Mary's University, Halifax, NS, CA (7/23/1999–7/25/1999).

47th Annual Meeting of the Pennsylvania Council of Teachers of Mathematics, Harrisburg, PA (3/19/1998–3/21/1998).

International Conference on Differential Equations with Applications to Biology, Dalhousie University, Halifax, NS, CA (7/25/1997–7/29/1997).

Third Geoffrey J. Butler Conference on Differential Equations and Population Biology, University of Alberta, Edmonton, AB, CA (6/25/1996–6/29/1996).

Second Biennial Symposium on Mathematical Modeling in the Undergraduate Curriculum, University of Wisconsin–LaCrosse, LaCrosse, WI (6/13/1996–6/15/1996).

"Careers in Mathematics," MAA Student Conference, Messiah College, Grantham, PA (10/07/1995).

International Congress of Toxicology–VII, Seattle, WA (7/2/1995–7/6/1995).

Society of Toxicology — Annual Meeting 1995, Baltimore, MD (3/6/1995–3/9/1995).

South Eastern Atlantic Regional Conference on Differential Equations, University of North Carolina at Wilmington, Wilmington, NC (10/15/1993–10/16/1993).

Presentations and Colloquia:

"Brownian Motion, the Heat Equation, and Option Pricing" at Davidson College ad honorem Dr. Laurence Cain, Davidson, North Carolina, USA (03/15/2018).

"An Introduction to Cryptography" at Manheim Central High School as part of the Spotlight on Science program, Manheim, Pennsylvania, USA (02/08/2018).

Panelist for "The Impact of Software on Learning in Upper Division Mathematics Courses" at the Joint Mathematics Meetings 2018 (MAA, AMS, SIAM), San Diego, California, USA (01/13/2018).

"Design and Analysis of a New Cryptosystem", a colloquium presentation given at Bryn Mawr College (10/02/2017) and at the joint Millersville University/Franklin & Marshall College colloquium series (11/20/2014).

"The Black-Scholes Options Pricing Formula", Eastern Pennsylvania/Delaware Mathematical Association of America Spring Meeting, Muhlenberg College (04/02/2016).

"Mathematics of Pari-Mutuel Wagering", a colloquium presentation given at the Villanova University colloquium series (11/20/2015) and at the joint Millersville University/Franklin & Marshall College colloquium series (04/17/2014) and Haverford College colloquium series (12/08/2014).

"Put-Call Parity", "Pari-Mutuel Wagering", and "Lognormal Behavior in Security Prices" given at Careers in Mathematics, Drexel University, Philadelphia, Pennsylvania, USA (11/23/2013).

"Modeling Pioneer/Climax Interactions Using Markov Processes", a presentation given at the First Joint Meeting of the American Mathematical Society and the Sociedad de Mathemática de Chile, Pucón, Chile (12/15/2010-12/18/2010).

"A Stochastic Model of a Pioneer/Climax Interaction", a presentation given at the 1048th American Mathematical Society meeting, North Carolina State University, Raleigh. North Carolina, USA (04/04/2009-04/05/2009).

"Integrating QuantLib and *Mathematica*", a presentation given at the SIAM Conference on Financial Mathematics and Engineering, New Brunswick, New Jersey, USA (11/21/2008–11/22/2008).

"An Introduction to Cryptography", a presentation given as part of the *Spotlight on Science* program at the Manheim Central Middle School, Manheim, Pennsylvania, USA (03/05/2008).

"New Features and Functions of *Mathematica* version 6", a a colloquium presentation given at the joint Millersville University/Franklin & Marshall College colloquium series (10/04/2007).

"A Quaternion-based Approach to Robot Arm Positioning", a colloquium presentation given at the joint Millersville University/Franklin & Marshall College colloquium series (11/16/2006).

"A competition model among crayfish species subject to predation", a poster displayed at the European Conference on Mathematical and Theoretical Biology, Dresden, Germany (07/18/2005-07/22/2005).

"Turing Instability in Pioneer/Climax Species Interactions", a contributed talk at the 2005 Society for Industrial and Applied Mathematics annual meeting, New Orleans, Louisiana, USA (07/12/2005).

"Linearity *vs.* Nonlinearity", a presentation given 03/25/2005 at the Millersville University Scholarship social.

"A Network Model of Alcoholism and Alcohol Treatment Policy", a colloquium presentation given 10/14/2004 at the joint Millersville University/Franklin & Marshall College colloquium series.

"An Introduction to State Space Reconstruction: Applications and Mathematical Prerequisites", a colloquium presentation given 10/16/2003 at the joint Millersville University/Franklin & Marshall College colloquium series.

"Eastern North Pacific Gray Whale Population Estimates: An Application of State Space Reconstruction", a contributed talk at the International Conference on Mathematical Biology 2003, University of Dundee, Dundee, Scotland, United Kingdom, (08/06/2003–08/09/2003)

"Bifurcations in Pioneer/Climax Population Interaction Models," a plenary talk at the Fourth Biomathematics Symposium, University of Cape Town, Cape Town, South Africa, (02/06/2003–02/07/2003).

"La inestabilidad de Turing de las interacciones de especies pionero y culminación," a talk at VI Simposio Internacional de Matemáticas 2002, Punta Arenas, Tierra del Fuego, Chile, (11/12/2002–11/16/2002).

"Forcing of Solutions to Reaction-Diffusion Equations With Applications to Population Models," a talk given 10/12/2002 at the 22nd Annual South Eastern Atlantic Regional Conference on Differential Equations, University of Tennessee, Knoxville, TN, USA (10/11/2002–10/12/2002).

"Some Aspects of Financial Mathematics: Options, Derivatives, Arbitrage, and the Black-Scholes Pricing Formula," a talk given 04/04/2002 at the Millersville University Department of Economics Colloquium series and again 04/18/2002 at the Millersville University Department of Mathematics Colloquium series.

"Cassinic Curves," a talk given 12/06/2001 at the Millersville University Department of Mathematics Colloquium series.

"La conducta asintótica de sistemas de ecuaciones de reacción-difusión con fuerzas y aplicaciones a modelos de poblaciones," a talk at Encuentro 2000 sponsored by the Sociedad de Matemáticas de Chile, Punta de Tralca, Chile, South America (10/26/2000-10/28/2000).

"Forcing of Solutions in n–Dimensional $\mathcal{C}^1$ Vector Fields With Applications to Population Models," a talk in the University of Delaware Mathematical Sciences Department Applied Mathematics Seminar, Newark DE (10/13/2000).

"Forcing of Solutions to a Reaction Diffusion Equation With Applications to Population Models," a poster presented at the Pacific Rim Dynamical Systems Conference held in Lahaina, HI (08/09/2000–08/13/2000).

"Discontinuous Forcing of Periodic Solutions in n–Dimensional $\mathcal{C}^1$ Vector Fields With Applications to Population Models," presented at the 2000 Society for Industrial and Applied Mathematics Annual Meeting held in Rio Grande, Puerto Rico (07/10/2000–07/14/2000). This is an extension of the results presented at 1999 World Conference on Natural Resource Modelling.

"An Analysis of Errors in a Hit Detection System," co-presented with Dr. Timothy McDevitt at the joint Millersville University/Franklin and Marshall Mathematics colloquium, (4/13/2000).

"Mathematical Issues in Seismic Imaging and Geophysical Tomography," presented at the Millersville University Earth Sciences colloquium, (2/23/2000).

"Mathematical Models in the High School Mathematics Curriculum," presented via teleconferencing at the XXVI Semana de la Matemática, Universidad Católica de Valparaíso, Chile (10/21/1999).

"Fixed Point Convergence," presented at the Scholarship Social sponsored by the Millersville University Center for Academic Excellence, Millersville, PA (10/15/1999).

"Discontinuous Forcing of Periodic Solutions in n–Dimensional $\mathcal{C}^1$ Vector Fields With Applications to Population Models," presented at the 1999 World Conference on Natural Resource Modelling, Saint Mary's University, Halifax, NS, CA (07/23/1999–07/25/1999). This paper was also presented at the joint Millersville University/Franklin and Marshall Mathematics colloquium, (10/07/1999).

"Dynamical Systems and Experimental Mathematics," presented at the 47th Annual Meeting of the Pennsylvania Council of Teachers of Mathematics, Harrisburg, PA (3/19/1998–3/21/1998).

"Asymptotic Behavior of Two Interacting Pioneer/Climax Species," presented at the International Conference on Differential Equations with Applications to Biology, Dalhousie University, Halifax, NS, CA (7/25/1997–7/29/1997).

"Discontinuous Forcing of Periodic Solutions in $\mathcal{C}^1$ Vector Fields With Applications to Population Models," presented at the Third Geoffrey J. Butler Conference on Differential Equations and Population Biology, University of Alberta, Edmonton, AB, CA (6/25/1996–6/29/1996).

"Allometric Scaling in Pharmacokinetic Modeling," presented at the Second Biennial Symposium on Mathematical Modeling in the Undergraduate Curriculum, University of Wisconsin–LaCrosse, LaCrosse, WI (6/13/1996–6/15/1996). This paper was also presented at the joint Millersville University/Franklin and Marshall Mathematics colloquium, (12/05/1996).

"Bounding a Perturbation of a Periodic Solution," presented at the joint Millersville University/Franklin and Marshall Mathematics colloquium, (11/05/1995).

"Toxicokinetics (TK) of Gemfibrozil in Rats, Mice, and Hamsters," presented at the International Congress of Toxicology–VII, Seattle, WA (7/2/1995–7/6/1995).

"Perturbations of Orbits in $\mathcal{C}^1$ Vector Fields," presented at the South Eastern Atlantic Regional Conference on Differential Equations, University of North Carolina at Wilmington, Wilmington, NC (10/15/1993–10/16/1993).

Workshops:

Rocky Mountain *Mathematica* 2007, Frisco, Colorado, USA (07/08/2007–07/13/2007).

22nd Annual Workshop on Mathematical Problems in Industry, University of Delaware, Needham, Massachusetts, USA (06/12/2006–06/16/2006)

Workshop on the Teaching of Linear Algebra, Drexel University, Philadelphia, Pennsylvania, USA (03/25/2006)

Institute for Advanced Studies/Park City Mathematics Institute, University of Utah, Salt Lake City, Utah, USA (06/26/2005-07/16/2005)

20th Annual Workshop on Mathematical Problems in Industry, University of Delaware, Newark, Delaware, USA (06/21/2004–06/25/2004)

Systems Biology: from Genes to Organisms, Center for Nonlinear Dynamics, McGill University, Montreal, Quebec, Canada (05/17/2004–05/28/2004).

Summer Academy for the Advancement of College Teaching, Pennsylvania State System of Higher Education, Millersville, Pennsylvania, USA (07/28/2002–08/02/2002).

Introduction to the Java Programming Language, National Science Foundation Chautauqua Short Course, Dayton, Ohio, USA (05/09/2002–05/11/2002).

TeachMap, Consortium for Mathematics and Its Applications (COMAP), Toronto, Ontario, Canada (11/14/2001–11/15/2001).

Rocky Mountain *Mathematica* 2001, Frisco, Colorado, USA (07/09/2001–07/14/2001).

Statistical Thinking with Active Teaching Strategies (STATS), US Air Force Academy, Colorado Springs, CO (11/20/1999).

Mathematical Geophysics Summer School 1999 — Tomography, Stanford University, Palo Alto, CA (08/02/1999–08/20/1999).

Mathematical Geophysics Summer School 1998 — Seismic Imaging, Stanford University, Palo Alto, CA (08/02/1998–08/21/1998).

Service:

Member of Five-Year Program Review committee for the Department of Mathematics (2017-2018).

Member of organizing committee for *Careers in Mathematics* conference held at Millersville University on 10/21/2017.

Member of the Department of Mathematics Promotion and Tenure Committee; 2014-2015 (chair).

Member of the Applied Mathematics position Search Committee (committee charged with filling vacancy left by resignation of Dr. Elizabeth Sell); 2014-2015.

Panelist (Financial Mathematics and Higher Education) at the Careers in Mathematics, Drexel University, Philadelphia, Pennsylvania, USA (11/23/2013).

Co-organizer of the Eastern Pennsylvania Delaware (EPaDel) Fall Meeting, Millersville University, Millersville, Pennsylvania, USA (10/27/2012).

Co-organizer of the Special Session on Applications of Differential and Difference Equations in Mathematical Biology and Ecology at the First Joint Meeting of the American Mathematical Society and the Sociedad de Matemáticas de Chile, Pucón, Chile, (12/15/2010–12/18/2010).

Judge, 2010-2018 Mega Math Challenge, responsible for reading and scoring approximately 25 solution reports to the challenge problems submitted by teams of high school students.

Co-organizer, 2009 Careers in Mathematics conference, Millersville University, Millersville, Pennsylvania USA (05/2008-10/2009).

Member of the Millersville University Promotion and Tenure Committee (chair 2009-2010); 08/2009–07/2011.

Member of the Millersville University Distinguished Visiting Professor Selection Committee; 09/2005–08/2007, 09/2009–present.

Coach/tutor for student preparing for the qualifying examination for the United States of America Mathematical Olympiad (USAMO); 03/2009–04/2009.

Member of the Visual and Performing Arts Center Management Task Force; 07/2008–03/2009.

External reviewer for State University of New York-Fredonia's proposal to create a major in applied mathematics; 07/2008–08/2008.

Institutional Identity Council; responsible for establishing goals and objectives for the identity project; 03/2007–06/2009.

Associate editor for the *Journal of Applied Mathematics*, Hindawi Publishing Co.; responsible for assigning reviewers for submitted manuscripts, coordinating reviews, and making decisions regarding the suitability for publication of articles; 09/2006–present.

Institutional Identity Committee; 09/2005–03/2007.

Member of the University Theme Committee; responsible for reviewing annual theme proposals; 09/2004–08/2006.

Chair of the Department of Mathematics Student Evaluation Committee; responsible for verifying that students have met all requirements for graduation at the time they apply to graduate, keeping lists of students receiving departmental honors, and counseling students on academic probation; 09/2004–present.

Member of the Department of Mathematics Honors Committee; 09/2004–present.

Member of the Department of Mathematics Undergraduate Curriculum Committee; responsible for reviewing curricular changes and additions at the departmental level; 09/2003–present.

Chair of the departmental committee organizing the Spring 2005 PA-SSHE Mathematics Conference at Millersville University (March 18-19, 2005); 05/2004–03/2005.

Member of the Technology Planning Task Force; responsible for articulating a technology plan which supports the implementation of the Academic Affairs Strategic Plan, Facilities Master Plan, Student Affairs Strategic Plan, Strategic Plan for Equity, Diversity, and Community, and the basic technology needs of the faculty, students, staff, and administration; 09/2003–08/2005.

Member of Millersville University Environmental Institute; responsible for consulting with programs and partners in the lower Susquehanna Valley region on research involving studies of air quality, land use, water resources, and biological resources; 09/2003–present.

Member of the Department of Mathematics Outcomes Assessment Committee; responsible for developing an outcomes assessment program for the Department of Mathematics; 09/2003–present.

Member of the University *Ad Hoc* Honor Code committee; 09/2003–04/2008.

Member of Scientific Advances Related to Homeland Security Committee; responsible for organizing two-day symposium on areas of scientific and mathematical research which may have an impact on our national and domestic security; 06/2003–11/2004.

Treasurer of Millersville Chapter of APSCUF; 06/2002–05/2004.

Member of Millersville Chapter of APSCUF Negotiations Committee; 06/2002–05/2004.

Member of the APSCUF Scholarship Committee; 03/2002–04/2002.

Member of the Distance Education Taskforce; 04/2002–04/2004.

Faculty marshal for commencement; 12/2000–12/2004.

Chair, Academic Technology Advisory Council (ATAC); 12/2001–08/2002.

Member of Department of Mathematics Five-Year Program Review Committee; 09/2001–06/2002.

Member of the Distinguished Visiting Professor Selection Committee; 5/2001–05/2003.

Member of the Science and Technology Institute Planning Committee; responsible for researching, developing, and writing a proposal to the State System of Higher Education to fund the creation and operation of a Science and Technology Institute at Millersville University; 03/2001–03/2002.

Member of the Millersville University Commission on the Status of Women; 09/1999–08/2003.

Search Committee for Instructional Design Technologist; 07/1999–09/1999.

Committee on Student Evaluation of Faculty; 06/1999–11/2002.

Academic Technology Advisory Committee; 06/1999–08/2002.

Co-director (with Marjorie Warmkessel) of the New Media Design Team; responsible for providing technical support and pedagogical guidance for the development of distance learning courses; 01/1999–07/1999.

World Wide Web page development for the 1998-1999 Academic Theme, "Millersville University: A Community of Learners"; 06/1998–05/1999.

Assistant program chair for the local chapter of the American Association for the Advancement of Science; responsible for reserving lecture rooms; audiovisual needs; dining facilities; and the logistics of bringing four speakers per year to MU and F&M; 06/1998–05/2000.

MU Advisory Committee for the Virtual University; facilitating the development of distance learning opportunities at MU; 04/1998–05/2000.

Millersville University Center for Applied Mathematics and Statistics; continuous advertisement of the capabilities and services of the CAMS relevant to business and industry in central Pennsylvania; developed drafts of brochure describing the Center; made trip to observe the Harvey Mudd College Mathematics Clinic student presentations and Clinic Advisory Council; directed two students on two contracts worth a total of $9,000 from central Pennsylvania business groups; 06/1997–present.

Undergraduate Course and Program Review Committee; review, critique, and vote on course, major/minor, and other curriculum changes; 09/1997–05/2001.

Mathematics Department World Wide Web (WWW) Page Development Committee; coded, updated, and maintained WWW pages describing the department's course offerings, majors, minors, options, degree programs, and scholarship; coordinated acquisition of faculty images for personal web pages; delivered a seminar in page development and deployment to department faculty; lent expertise to the Women's Studies faculty for the development of their WWW pages; developed WWW pages and online preregistration form for the *Careers in Mathematics* conference held at Millersville University on 11/15/1997; 08/1995–present.

Department of Mathematics Information Technology Liaison (with Dr. Bruce Ikenaga); liaised with Academic Computing regarding computer hardware and software held by the mathematics department; installed *Mathematica* (Wolfram Research, Inc.) and GNU C++ (Free Software Foundation, Inc.) in the mathematics department computer laboratory, determined hardware requirements for computer upgrades, installed and configured operating system and user software for new faculty; 08/1995–present.

Department of Mathematics Applied Mathematics Caucus; discussed and developed curriculum recommendations for an option in applied mathematics and an industrial/applied mathematics program which will pair Millersville University students and faculty with applied mathematics research projects submitted by local industries; 08/1995–08/2006.

Department of Mathematics Computing Resources Committee; reviewed and ranked hardware and software needs of mathematics department faculty, determined allocation of department funds for hardware and software acquisitions; 08/1995–present (chair from 09/2003–09/2004).

Mathematics Department Precalculus Committee; reviewed syllabi, course content, objectives and textbooks of MATH 160 *Precalculus*, MATH 101 *College Algebra* and MATH 090 *Basic Mathematics*; 09/1996–08/2006.

Millersville University Faculty Professional Development Council (FPDC) Committee; screened and critiqued proposals generated by MU faculty bound for the SSHE FPDC grants program; 10/1996–11/1998.

Millersville University New Faculty Orientation Committee; helped plan orientation activities of the faculty members arriving for the Fall 1996, 1997 and 1999 semesters, participated in discussions on syllabus design, teaching with technology, and reappointment issues; 06/1996–08/1999.

Applied Mathematics Search Committee member; contributed to the writing of position advertisement, review of application materials, telephone and face–to–face interviews of candidates; 10/1995–04/1996.

Honors Student Luncheon; represented the School of Science and Mathematics at the luncheon and wrote followup letters to prospective honors students trying to encourage them to matriculate to Millersville University; twice per year.

Pennsylvania Junior Academy of Science; judged high school students' physics projects; 02/24/1996.

Millersville University Admissions Phonathon; telephoned prospective MU mathematics and mathematics education majors; 03/06/1996.

Glenna Hazeltine Women in Mathematics and Science Conference; moderated section of presentations; 03/12/1996, 03/31/1998, 04/03/2001, 04/09/2002, 04/06/2010.

Courses Taught:

Course Number	Course Title	Sections Taught to Date
MATH 100	*Survey of Mathematical Ideas*	8
MATH 101	*College Algebra*	6
MATH 110	*Trigonometry*	2
MATH 130	*Elements of Statistics I*	18
MATH 151	*Calculus for the Management, Life, and Social Sciences*	6
MATH 160	*Precalculus*	1
MATH 171	*Freshman Seminar in Mathematics*	6[a]
MATH 161	*Calculus I*	24
MATH 211	*Calculus II*	17[b]
MATH 311	*Calculus III*	17[c]
MATH 269	*Calculus and Actuarial Science Problem Solving Seminar*	1[d]
MATH 312	*Software for Multivariable Calculus*	8
MATH 322	*Linear Algebra*	3[e]
MATH 365	*Ordinary Differential Equations*	14
MATH 375	*Numerical Analysis*	8
MATH 379[f]	*Mathematical Modeling in the Biological Sciences*	1
MATH 408	*Discrete Dynamical Systems*	1
MATH 408	*Cryptography*	1
MATH 464	*Real Analysis*	2
MATH 465	*Real Analysis II*	1[d]
MATH 467	*Partial Differential Equations*	7
MATH 471	*Mathematical Modeling*	4[a]
MATH 472	*Financial Mathematics*	8[a]
MATH 478[g]	*Cryptography*	1
MATH 478[g]	*Mathematical Biology*	1[d]
MATH 478[g]	*Actuarial Science*	3
UNIV 103[h]	*Freshman Year Experience*	6

[a]Includes experimental course offering.

[b]Includes sections of MATH 162.

[c]Includes sections of MATH 261.

[d]Individualized instruction to one or more students.

[e]Includes sections of MATH 242.

[f]Cross listed as BIOL 379 and team taught with Dr. David Ostrovsky, Department of Biology (retired).

[g]Special topics in mathematics course offering.

[h]Team taught with five other members of the Department of Mathematics.