JEFFREY L. STUART, Ph.D., FRM

Curriculum Vitae – September 2018

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# ACADEMIC EXPERIENCE:

##### Pacific Lutheran University, Tacoma, Washington 2001 –

 2007 – Professor of Mathematics

 2001 - 2007 Associate Professor of Mathematics (Tenured, Spring 2004)

##### University of Southern Mississippi, Hattiesburg, Mississippi 1987 – 2001

 1998 - 2001 Professor of Mathematics

 1991 - 1998 Associate Professor of Mathematics (Tenured, Spring 1992)

 1987 - 1991 Assistant Professor of Mathematics

##### Northern Illinois University, Dekalb, Illinois 1986 – 1987

 1986 - 1987 Visiting Assistant Professor of Mathematics

##### University of Wisconsin, Madison, Wisconsin 1980 – 1986

 Spring 1986 Research Assistant, Department of Mathematics

 1980 - 1985 Teaching Assistant, Department of Mathematics

**Sabbatical Positions**

 Fall 2006 Visiting Professor of Mathematics

 Department of Mathematics, Washington State University, Pullman, Washington

 Spring 1999 Visiting Professor of Mathematics

 Department of Mathematical Sciences, University of West Florida, Pensacola, Florida

 Fall 1998 Visiting Professor of Mathematics

 Department of Mathematics and Computer Science, Georgia State University

 Atlanta, Georgia

 Fall 1991 Visiting Scholar, Special Year in Linear Algebra

 Institute for Mathematics and its Applications, University of Minnesota

 Minneapolis, Minnesota

# EDUCATION:

 1986 Ph.D., Mathematics, University of Wisconsin, Madison

 Minor field of study: Computer Science

 Dissertation Title: “ZM-matrices and MM-matrices”

 Advisor: Professor Hans Schneider

 1981 M.A., Mathematics, University of Wisconsin, Madison

 1980 B.A., Magna Cum Laude, Mathematics and Physics, Pomona College, Claremont, California

 Thesis title: “A Numerical Solution for Acoustic Ray Paths in a Two Dimensional Ocean”

# FIELDS OF GENERAL INTEREST:

 Matrix Theory, Graph Theory, Combinatorial Optimization, Statistics, Linear Algebra Education,

 Finance, Financial Risk Management

# FIELDS OF CURRENT RESEARCH:

 Sign and Ray Pattern Matrices, Tournaments, Algebraic Constraints on Matrix Spectra

 Business Decision Models, Economic Models of Debt and US GDP

# HONORS:

 2004 K.T. Tang Excellence in Research Award, Pacific Lutheran University

 2001 Distinguished Teaching Award, Mississippi-Louisiana Section of the Mathematical

 Association of America

 2000 University Faculty Excellence in Teaching Award (University of Southern Mississippi)

 1980 National Science Foundation Fellowship Honorable Mention 1980 Election to Phi Beta Kappa Honor Society, Pomona College 1980 Distinction on Senior Exercises in Mathematics and Physics

 1980 Senior Physics Prize

 1979 Junior Prizes in Mathematics and Physics

 1976-80 Dean’s List (eight semesters), Pomona College

 1976 National Merit Scholar

2016 Emerald Literati Network Awards for Excellence “A mathematical model for exploring the evolution of organizational structure”, coauthored with Finnie and Gibson, selected as one of three Highly Commended Papers in *International Journal of Organizational Analysis 2015*

# MEMBERSHIPS:

 Phi Beta Kappa

 International Linear Algebra Society

 Mathematical Association of America

 Global Association of Risk Professionals

# SOCIETY OF ACTUARIES – Series 100 Exams (16 Hours):

 Passed (1994 -- 1996): 100, 110, 120, 121, 130, 135, 140, 151, 160, 165

Current SOA equivalents: P, FM, C; VEE credit for Corporate Finance, Economics, Applied Statistics

# GLOBAL ASSOCIATION OF RISK PROFESSIONALS

 **FRM 1 Exam** passed (November 2014)

 **FRM 2 Exam** passed (November 2016) **Certified FRM**, January 2017

# LANGUAGES:

 Fluent in English and Spanish. Moderate command of German.

# GRANTS

 Co-author with Bryan Dorner and Daniel Heath, "Adapting WeBWorK Internet-Based Gateway Exams

 and Maple PowerTools to Introduce Appropriate Use of Technology in the First Two Semesters of

 Calculus", National Science Foundation, funded for $141,600 for three years beginning September,

 2003.

**FINANCIAL CONSULTING PROJECTS:**

November – December 2014, Developed a pricing model for complex, senior management contracts for a private investments firm. Used Monte Carlo simulation to generate valuation brackets. Joint work with Dr. Kevin Boeh, director of the Upshot Group.

**ADDITIONAL FINANCE TRAINING:**

 Participant, Advanced Portfolio and Risk Management Bootcamp, August 12-17, 2013,

 run by Atillio Meuci and SYMMYS, and hosted at New York University in Manhattan.

# SOFTWARE EXPERIENCE:

 Extensive programming and teaching experience with MATLAB

 Teaching experience using SPSS, Calipso, MINITAB, Maple, WebAssign, Sakai

 Extensive use of Scientific Workplace (MAPLE and LaTex front end)

 Extensive experience using Microsoft Access, Excel and Word

# PUBLICATIONS:

## Textbook

 *Mathematics for Finance – An Introduction for Masters of Finance Students*, in preparation.

 (Expected completion date: December 2018, expected length: 600 pages)

## Refereed International Journals and Book Chapters

 1. J. Stuart, “The Drazin generalized inverse of a singular MMA-matrix”, Linear and Multilinear

 Algebra 22 (1987) 75-85.

 2. J. Stuart, “The decomposition of idempotents associated with inflators”, Linear Algebra and its

 Applications 97 (1987) 171-184.

 3. J. Stuart “Eigenvectors for inflation matrices and inflation-generated matrices”, Linear and

 Multilinear Algebra 22 (1988) 249-265.

 4. J. Stuart, “Inflation matrices and ZME-matrices which commute with a permutation matrix”, SIAM

 Journal on Matrix Analysis and Applications Vol. 9, No. 3 (1988) 408-418.

 5. J. Stuart, “An infinite family of matrix inequalities with ZME-matrix coefficients”, Linear Algebra

 and its Applications 108 (1988) 141-156.

 6. H. Schneider and J. Stuart, “Allowable spectral perturbations for ZME-matrices”, Linear Algebra

 and its Applications 111 (1988) 62-118.

 7. J. Stuart, “Matrices whose powers are completely reducible Z-matrices”, Linear and Multilinear

 Algebra 25 (1989) 75-83.

 8. J. Stuart, “An eigenvector test for inflation matrices and ZME-matrices”, SIAM Journal on Matrix

 Analysis and Applications Vol.10, No. 4 (1989) 520-532.

 9. J. Stuart, “The partial order graph for a ZME-matrix” Linear Algebra and its Applications 141

 (1990) 123-152.

 10. J. Stuart, “The determinant of a Hessenberg L-matrix”, SIAM Journal on Matrix Analysis and

 Applications 12 (1991) 7-15.

 11. J. Stuart and J. Weaver, “Matrices that commute with a permutation matrix”, Linear Algebra and

 its Applications, 150 (1991) 255-265.

 12. J. Stuart and J. Weaver, “Diagonally scaled permutations and circulant matrices”, Linear Algebra

 and its Applications 212 (1994) 397-411.

 13. S. Friedland, R. Hemasinha, H. Schneider, J. Stuart and J. Weaver, “Row sums and inverse row

 sums for nonnegative matrices”, SIAM Journal on Matrix Analysis and Applications Vol. 15, No.4

 (1994) 1157-1166.

 14. J. Stuart and D. Sitton, “Packing complete graphs into complete multipartite graphs”, Congressus

 Numerantium, 118 (1996) 3-22.

 15. J. Stuart and J. Weaver, “Fiedler matrices and their factorization”, Linear Algebra and its Appli-

 cations 275 (1998) 579-594.

 16. J. Stuart, "A polynomial time spectral decomposition test for certain classes of inverse M-matrices",

 Electronic Linear Algebra 3 (1998) 129-141.

 17. J. Stuart, C. Eschenbach and S. Kirkland, “Irreducible sign k-potent sign pattern matrices”, Linear

 Algebra and its Applications, 294 (1999) 85-92.

 18. J. Stuart, "Reducible sign k-potent sign pattern matrices", Linear Algebra and its Applications,

 294 (1999) 197-211.

 19. C. Eschenbach, F. Hall, R. Hemasinha, S. Kirkland, Z. Li, B. Shader, J. Stuart and J. Weaver,

 "Almost regular tournament matrices", Linear Algebra and its Applications, 306 (2000) 103-121.

 20. C. Eschenbach, F. Hall, R. Hemasinha, S. Kirkland, Z. Li, B. Shader, J. Stuart and J. Weaver,

 "Properties of tournaments among well-matched players", American Mathematical Monthly,

 107 (10) (2000) 881-892.

 21. J. Stuart, "Eigenvectors: Fixed vectors and fixed directions (discovery exercises)", in Linear Algebra

 Gems, D. Carlson, C. Johnson, D. Lay and D. Porter, eds., Mathematical Association of America,

 New York, 2001, 71–73..

 22. J. Stuart, L. Beasley and B. Shader, "Irreducible, pattern k-potent ray pattern matrices", Linear

 Algebra and Its Applications, 346 (2002) 261 – 271.

 23. Z. Li, F. Hall and J. Stuart, “Irreducible, powerful ray pattern matrices”, Linear Algebra and Its,

 Applications, 342 (2002) 47-58.

 24. J. Stuart, "Reducible pattern k-potent ray pattern matrices", Linear Algebra and Its Applications,

 362 (2003) 87-99

 25. R. Hemasinha, S. Kirkland, J. Stuart and J. Weaver, "Properties of the Brualdi-Li tournament

 matrix", Linear Algebra and Its Applications, 361 (2003) 63-73.

 26. J. Stuart, "Shake a stick at ill-conditioning", in F. Uhlig, “Report on the 10th ILAS Conference

 “Challenges in Matrix Theory” at Auburn University in June 2002”, Linear Algebra and Its

 Applications, 379 (2004) 517-520.

 27. R. Hasfura-Buenaga, A. Holder and J. Stuart, “Asymptotic stability of the optimal partition”,

 Linear Algebra and Its Applications, 394 (2005) 145-167.

 28. J. Stuart, Review essay on four linear algebra textbooks, American Mathematical Monthly, 2005

 Monthly, 112 (3) (2005) 281-288.

 29. F. Hall, Z. Li and J. Stuart, "Reducible, powerful ray patterns", Linear Algebra and Its Applications,

 399 (2005) 125-140.

 30. J. Stuart, “Digraphs and Matrices”, book chapter in the Handbook of Linear Algebra,

 Leslie Hogben, ed., Chapman and Hall -- CRC Press, 2007.

 31. J. McDonald and J. Stuart, “Spectrally arbitrary ray patterns”, Linear Algebra and Its

 Applications, 429 (2008) 727-734.

 32. K. Griffin, J. Stuart, and M. Tsatsomeros, “A family of noncirculant Toeplitz matrices all of whose

 powers are Toeplitz matrices”, Czech Mathematics Journal, 58 (2008) 1185 -1193.

 33. B. Finnie, L. Gibson, J. Stuart and F. Zabriski, “Balancing environmental and industry Sustainability:

 a case study of the U.S. gold mining industry”, J. Environmental Management, 90 (2009) 3690 -

 3699.

 34. J. Stuart, "The eavesdropping number", Czech Journal of Mathematics, 59 (134) (2009) 623–636.

 35. J. Stuart and J. Weaver, “Voting Matrices and Tie Breaking”, International Journal of Pure and

 Applied Mathematics , 54 (No. 3) (2009) 437–470.

 36. Q. Li, B. Liu and J. Stuart, “Bounds on the kth generalized base of a primitive sign pattern matrix”,

 Linear and Multilinear Algebra, 58 (2010) 355–366.

 37. J. Stuart, “Building generalized inverses of matrices using only row and column operations”,

 International Journal of Mathematical Education in Science and Technology, 41 (2010) 1102 - 1113.

 38. J.-S. Jeon, J. McDonald and J. Stuart, “The minimum upper bound on the first ambiguous power of

 an irreducible, nonpowerful sign or ray pattern,” Linear Algebra and Its Applications.435 (2011)

 1147 – 1156.

…39. L. Lebtahi, J. Stuart, N. Thome and J. Weaver, “Matrices A such that RA = As+1R when Rk = I”,

 Linear Algebra and its Applications, 439 (2013) 1017–1023.

 http://dx.doi.org/10.1016/j.laa.2012.10.034

 40. J. Stuart, “Digraphs and Matrices”, book chapter in the Handbook of Linear Algebra, 2nd edition

 Leslie Hogben, ed., Chapman and Hall -- CRC Press, 2013.

 41. M. Catral, L. Lebtahi, J. Stuart and N. Thome, “On a matrix group constructed from an

 {Rs+1,k}-matrix, Linear Algebra and its Applications, 461 (2014) 200--210.

 42. B. Finnie, L. Gibson and J. Stuart, “A mathematical model for exploring the evolution of

 organizational structure”, International Journal of Organizational Analysis, 23:1 (2015).21--40.

 43. J. Stuart, “Nested matrices and inverse M-matrices”, Czech Journal of Mathematics, 65, no. 2

 (2015) 537--544.

 44. J. Stuart, "Sign k-potent sign patterns and ray k-potent ray patterns that allow k-potence",

 Linear Algebra and its Applications, 527.(2017) 163 – 183.

 45. M. Catral, L. Lebtahi, J. Stuart and N. Thome, “Complex matrices such that A^(s+1)R = RA^\*

 with R^k = I, Linear Algebra and its Applications, 552 (2018) 85 -- 104.

 46. B. Finnie, L. Gibson and J. Stuart, “The curse of confidence: a behavioral approach to the

 Fischer Debt Cycle”, in preparation.

## Nonrefereed Publications

 1. “Eigenvalues, Generalized Eigenvectors and the Jordan Canonical Form for Inflation Matrices”,

 Talk summary published in the conference report for second Utah State University Matrix Theory

 Conference: Linear Algebra and its Applications 104 (1988) 237-239.

 2. “Reducible ZM- and MM-matrices”, Talk summary published in the conference report for the Uni-

 versity of Victoria Combinatorial Matrix Theory Conference: Linear Algebra and its Applications

 107 (1988) 349-354.

 3. “Hessenberg L-matrices”, Talk summary published in the conference report for the Sixth Haifa

 Matrix Theory Conference: Linear Algebra and its Applications, 167 (1992) 261-265.

 4. Book Review, “Matrix Theory and Applications”, C. R. Johnson, ed., SIAM Review 33 (1991)

 511-512.

 5. “Conference Report on the Third Conference of ILAS, Pensacola, Florida, March 1993”, joint with

 J. Weaver, Linear Algebra and its Applications, 212/213 (1994) 547-551.

 6. “Using MATLAB to encourage formation of conjectures by students”, Proceedings of the Fifth SIAM

 Conference on Applied Linear Algebra, J. Lewis, ed., SIAM, Philadelphia, 1994, 538-542.

 7. “An explicit characterization of matrices whose norms induced by symmetric gauge functions are

 permutation invariant”, Mississippi Academy of Sciences Report, 95-1 (1995) 25 - 29.

 8. “Easing into eigenvectors in introductory linear algebra”, Mississippi Academy of Sciences Report,

 96-1 (1996) 33 - 43.

 9. “Polytopic structure for classes of Fiedler matrices”, joint with J. Weaver, Mississippi Academy of

 Sciences Report, 97-1 (1997) 61-73.

 10. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 26 (2001) 27-29.

 11. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 28 (2002) 4.

 12. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 30 (2003) 5.

 13. “Powers of ray pattern matrices”, Conference proceedings of the SIAM Conference on Applied

 Linear Algebra,, July, 2003, at <http://www.siam.org/meetings/la03/proceedings/stuartjl.pdf> .

 14. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 32 (2004) 7.

 15. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 34 (2005) 6.

 16. “Letter to teachers from the (AP Calculus) Reading”, Newsletter of the North Carolina

 Association of Advanced Placement Mathematics Teachers, Volume 13, Number 2 (2005) 7-8.

 17. “Greetings from Fort Collins – Another letter to teachers from the (AP Calculus) Reading”, News-

 letter of the North Carolina Association of Advanced Placement Mathematics Teachers, Volume

 14, Number 2 (2006) 5-7.

 18. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 36 (2006) 11.

 19. “How bad can your data be? Convexity and Variance Maximization”, Proceedings of the American

 Statistical Association, Statistical Computing Section [CD-ROM], Alexandria, VA: American

 Statistical Association: xx-xx+3.

 20. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 38 (2007) 4.

 21. Book Review: “The Unknown Quantity” by John Derbyshire, IMAGE – Bull. International Linear

 Algebra Society, 38 (2007) 13-14.

 22. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 40 (2008) 12.

 23. ILAS Treasurer’s Report, IMAGE – Bull. International Linear Algebra Society, 42 (2009) 14.

 24. “Sustainability: The Case of Gold”, joint with Bruce Finnie and Linda Gibson, Encyclopedia of

 the Earth (http://www.eoearth.org/), February, 2010.

 25. “Government is spiraling into debt that can’t be sustained”, joint with Bruce Finnie and Linda

 Gibson, editorial, Tacoma News Tribune, March 31, 2010.

 26. Book Review: “Introductory Combinatorics” by Richard Brualdi, IMAGE – Bull. International Linear

 Algebra Society, 44 (2010), 27.

 27. “Congress continues to push nation towards a financial catastrophe”, joint with Bruce Finnie and

 Linda Gibson, editorial, Tacoma News Tribune, November 4, 2010.

 28. “A road map to national solvency – Tough choices need to be made to get out of debt crisis”, joint

 with Bruce Finnie and Linda Gibson, editorial, Tacoma News Tribune, July 25, 2011.

 29. J. Stuart, “Special families of matrices – a talk in honor of Miroslav Fiedler”, Linear Algeba and its

 Applications, 439 (2013) 830–835. <http://dx.doi.org/10.1016/j.laa.2011.11.041>

 30. “Gold standard might sound good – but it would be a disaster”, joint with Bruce Finnie and Linda

 Gibson, editorial, Tacoma News Tribune, March 7, 2013.

 31. B. Finnie, L. Gibson and J. Stuart, “The curse of confidence: a behavioral approach to the

 Fischer Debt Cycle”, conference paper for the Western Economics Association International annual

 conference, Denver, August, 2014.

 32. J. Stuart, An interview with Miroslav Fiedler, “Try to be really good in two fields”, IMAGE – Bull.

 International Linear Algebra Society, 54 (2015) 6 - 7.

 33. J. Stuart, An interview with Miroslav Fiedler, “Try to be really good in two fields”, Czech. Math J., 66

 no. 3 (2016) 593-596.

 34. F. Hall, T. Markham, M. Rozložník and J. Stuart, “Miroslav Fiedler (7.4. 1926 - 20.11. 2015)",

 Czech. Math. J., 66, no. 3 (2016) 585-590.

 35. R. Horn and J. Stuart, Solution to IMAGE Problem 57-4, IMAGE – Bull. International Linear Algebra

 Society, 59 (2017) 38-39.

 36. R. Horn and J. Stuart, Solution to IMAGE Problem 58-1, IMAGE – Bull. International Linear Algebra

 Society, 59 (2017) 39-40.

## IMAGE – Bulletin of the International Linear Algebra Society – Problems Created

 Problem #57 – 4 problem and solution written with Roger Horn (2016)

## IMAGE – Bulletin of the International Linear Algebra Society – Problems Solved

 47 – 4 (2012)

 58 – 1 (2017) with Roger Horn

 59 – 1 (2017)

 59 – 4 (2017)

## American Mathematical Monthly Problems Solved

 10831 (2001)

11028 (2003)

11224 (2006)

11239 (2006)

11379 (2008)

11422 (2009)

11487 (2010)

11530 (2011) with Roger Horn

11593 (2011)

11619 (2012)

11743 (2013)

11917 (2016)

12025 (2018)

## Mathematics Magazine Problems Solved

 1774 (2007)

 1789 (2008)

 1856 (2010)

 1925 (2013)

 1995 (2016)

 2030 (2017)

 2040 (2018)

## College Mathematics Journal Problems Solved

 1049 (2015)

 1053 (2015)

 1071 (2016)

 1112 (2017)

 1113 (2017)

# PROFESSIONAL PRESENTATIONS:

##  Conferences:

 1. “Products of commuting MMA-matrices” at the SIAM Second Applied Linear Algebra Conference,

 Raleigh, North Carolina, April, 1985.

 2. “Eigenvalues, Generalized Eigenvectors and the Jordan Canonical Form for Inflation Matrices” at

 the second Utah State University Matrix Theory Conference, Logan, Utah, January 1987.

 3. “Reducible ZM- and MM-matrices” at the University of Victoria Combinatorial Matrix Theory

 Conference, Victoria, British Columbia, May, 1987.

 4. “Inflation matrices which commute with permutation matrices” at the SIAM Third Applied Linear

 Algebra Conference, Madison, Wisconsin, May, 1988. 5. “A characterization of reducible ZM- and MM-matrices” at the SIAM Third Applied Linear Algebra

 Conference, Madison, Wisconsin, May, 1988.

 6. “Partial Order Graphs for MMA-matrices” at the Southeast International Conference on Combina-

 torics, Graph Theory and Computation, Boca Raton, Florida, February, 1989.

 7. “Matrices that commute with a permutation matrix” at the International Linear Algebra Society

 Inaugural Conference, Provo, Utah, August, 1989.

 8. “Matrices that commute with a generalized permutation matrix” at the Directions in Matrix Theory

 Conference, Auburn, Alabama, March, 1990.

 9. “Determinants of Hessenberg L-matrices” at the sixth Haifa Matrix Theory Conference, Haifa,

 Israel, June, 1990.

 10. “Powers of N0-matrices”, at the second Northern Illinois University Conference on Linear Algebra,

 Numerical Linear Algebra and Applications, DeKalb, Illinois, May, 1991. 11. “Partially zero Jordan Chains”, at the SIAM Fourth Applied Linear Algebra Conference, Minne-

 apolis, Minnesota, September, 1991.

 12. “Predicting inverse row sums via row sums”, Louisiana-Mississippi section, Mathematical

 Association of America, annual conference, Biloxi, Mississippi, February, 1993.

 13. “Spectra of five banded Toeplitz matrices”, International Linear Algebra Society, Linear Algebra:

 The New Generation, Pensacola, Florida, March, 1993.

 14. “Using MATLAB to teach numerical linear algebra”, Louisiana-Mississippi section, Mathematical

 Association of America, annual conference, Nichols State University, Thibodaux, Louisiana,

 March, 1994.

 15. “Using MATLAB to encourage formation of conjectures by students”, at the Fifth SIAM Conference

 on Applied Linear Algebra, Snowbird, Utah, June, 1994.

 16. “Matrix software: From calculator to student laboratory”, at the AMS-MAA joint meeting, San

 Francisco, California, January, 1995.

 17. “An explicit characterization of matrices whose norms induced by symmetric gauge functions are

 permutationally invariant”, at the Mississippi Academy of Sciences Annual Meeting, Biloxi, Missis-
 sippi, February, 1995.

 18. “Induced norms, symmetric gauge functions and permutation invariance”, at the Louisiana-

 Mississippi section, Mathematical Association of America, annual conference, Biloxi, Mississippi,

 March, 1995.

 19. “A kinder, gentler approach to eigenvectors and eigenvalues”, at the Fifth ILAS Conference,

 Atlanta, Georgia, August, 1995.

 20. “Maximum coverings of complete, multipartite graphs using complete graphs”, at the Southeast

 International Conference on Combinatorics, Graph Theory and Computation, Baton Rouge,

 Louisiana, February, 1996.

 21. “Easing into eigenvectors and eigenvalues in introductory linear algebra”, at the Mississippi

 Academy of Sciences Annual Meeting, Jackson, Mississippi, February, 1996.

 22. “Maximum coverings of complete, multipartite graphs using complete graphs”, at the Mississippi

 Academy of Sciences Annual Meeting, Jackson, Mississippi, February, 1996.

 23. “Easing into eigenvectors in introductory linear algebra”, at the Louisiana-Mississippi section,

 Mathematical Association of America, annual conference, Baton Rouge, Louisiana, March, 1996.

 24. “Packing complete graphs into complete, multipartite graphs”, at the Cumberland Combinatorics

 and Graph Theory Conference, Oxford, Mississippi, May, 1996.

 25. “Sign patterns that have unambiguous powers”, at the Sixth ILAS Conference, Chemnitz, Germany,

 August, 1996.

 26. “Qualitative matrix theory: sign patterns and invertibility” at the University of South Alabama –

 University of Southern Mississippi Joint Miniconference, Hattiesburg, Mississippi, February, 1997.

 27. “Polytopic structure for classes of Fiedler matrices”, at the Mississippi Academy of Sciences Annual

 Meeting, Biloxi, Mississippi, February, 1997. 28. “Factorizations of Fiedler Matrices”, at the Louisiana-Mississippi section, Mathematical Association

 of America, annual conference, Jackson, Mississippi, February, 1997.

 29. "Sign k-potent sign pattern matrices", at the Mississippi Academy of Sciences Annual Meeting,

 Biloxi, Mississippi, February, 1998.

 30. "Sign k-potent sign pattern matrices", at the Seventh ILAS Conference, Madison, Wisconsin, June,

 1998.

 31. "Tournaments: Easy questions, hard answers", at the Florida Section, of the Mathematical Asso-

 ciation of America, annual conference, Panama City, Florida, March, 1999.

 32. "Diagonalizability of tournaments", at the SIAM Annual Meeting, Atlanta, Georgia, May, 1999.

 33. "Tournaments: Easy questions, hard answers", at the Colorado-Wyoming Matrix and Graph

 Theory Miniconference, Denver, Colorado, June, 1999.

 34. "Walk spaces of certain classes of tournaments", at the Eighth ILAS Conference, Barcelona,

 Spain, July, 1999.

 35. "Tournaments – Easy Questions, Hard Answers", at the University of South Alabama –

 University of Southern Mississippi Joint Miniconference, Mobile, Alabama, February, 2000.

 36. "Pattern k-potent ray pattern matrices" at the Mississippi Academy of Sciences Annual Meeting,

 Biloxi, Mississippi, February, 2000.

 37. "Tournaments: Easy questions, hard answers", at the Mississippi-Louisiana Section, of the

 Mathematical Association of America, annual conference, Lafayette, Louisiana, February, 2000.

 38. “Pattern k-potent ray pattern matrices”, at the SIAM Seventh Conference on Applied Linear

 Algebra, Raleigh, North Carolina, October, 2000.

 39. “Shake a stick at ill-conditioning” at the AMS-MAA Joint Meeting, New Orleans, January, 2001.

 40. “Asymptotic stability of the optimal partition” at the Ninth ILAS Conference, Haifa, Israel, June,

 2001.

 41. "Powerful ray pattern matrices" at the Western Canada Linear Algebra Meeting, Regina, Canada,

 May, 2002.

 42. "Adventures in graph theory" at the Pacific Northwest Sectional Meeting of the MAA, Portland,

 Oregon, June, 2002.

 43. "Shake a stick at ill-conditioning" at the Ninth ILAS Conference, Auburn, Alabama, July 2002.

 44. “(m,n)-pebbling of graphs” at the Pacific Northwest Sectional Meeting of the MAA, Walla Walla

 Washington, June, 2003.

 45. "Reducible, powerful ray patterns” at the SIAM Conference on Applied Linear Algebra

 Williamsburg, Virginia, July, 2003.

 46. “Ray patterns, ray determinants and ray nonsingularity”, Directions in Combinatorial Matrix

 Theory, Banff, Alberta, Canada, May, 2004.

 47. “Ray patterns, ray determinants and ray nonsingularity”, Eleventh ILAS Conference, Coimbra,

 Portugal, July, 2004.

 48. “A simple classroom demonstration of ill-conditioning”, at the Pacific Northwest Sectional Meeting

 of the MAA, Tacoma, Washington, April, 2005.

 49. “Ray patterns, ray determinants and inversion”, Special Session on Combinatorial Matrix Theory

 AMS Central Section Meeting, Lincoln, Nebraska, October, 2005.

 50. “Trends in Linear Algebra Texts in the United States”, Thirteenth ILAS Conference, Amsterdam, the

 Netherlands, July, 2006.

 51. “How bad can your data be? Variance maximization and convexity”, poster presentation, Joint

 Statistics Meeting, Seattle, Washington, August, 2006.

 52. “Noncirculant Toeplitz matrices all of whose positive powers are Toeplitz matrices”, Fourteenth

 ILAS Conference, Shanghai, China, July, 2007.

 53. “Eavesdropping on graphs”, AMS session on combinatorics, Joint Math Meeting, San Diego,

 California, January, 2008.

 54. “Appropriate use of WeBWorK, WebAssign and Maple in Calculus I and II”, NSF poster session,

 Joint Math Meeting, San Diego, California, January, 2008.

 55. “Spectrally arbitrary ray patterns”, Fifteenth ILAS Conference, Cancun, Mexico, June, 2008.

 56. “Appropriate use of WeBWorK, WebAssign and Maple in Calculus I and II”, NSF poster session,

 Joint Math Meeting, Washington, DC, January, 2009.

 57. “Teach ill-conditioning to introductory linear algebra students in a single lecture!”, MAA Session on

 Innovative and Effective Ways to Teach Linear Algebra, Joint Math Meeting, Washington, DC,

 January, 2009.

 58. “Teach ill-conditioning in a single lecture!”, Special Session on Teaching Numerical Analysis,

 MAA Math Fest, Portland, OR, August, 2009.

 59. “Math Placement at a Selective Liberal Arts University”, Short Course on Math Placement,

 MAA Math Fest, Portland, OR, August, 2009.

 60. “Inverses for matrices that do not have inverses”, MAA Session on Innovative and Effective Ways

 to Teach Linear Algebra, Joint Math Meeting, San Francisco, CA, January, 2010.

 61. “Inverses for matrices that do not have inverses”, Session on Pedagogical Gems, MAA Pacific

 Northwest Section Meeting, Seattle, WA, April, 2010.

 62. Panel Discussant: “Careers and Graduate School”, 2013 NUMS – Northwest Undergraduate Math

 Symposium, Tacoma, WA, April, 2013.

 63. “Two groups associated with an {R,s+1,k}-matrix”, MAA MathFest, Portland, OR, August 2014.

 64. “Modeling two common business decision errors”, MAA PNW section meeting, Tacoma, WA,

 April, 2015.

 65. "Specific examples, generic elements and restricted dimensions - overcoming student roadblocks

 in linear algebra", MAA Session on Innovative and Effective Ways to Teach Linear Algebra, Joint

 Math Meeting, Seattle, WA, January, 2016.

 66. "Specific examples, generic elements and size tuning - overcoming student roadblocks in linear

 Session on Teaching Tricks and Techniques, MAA Pacific Northwest Section Meeting, Corvallis,

 OR, April, 2016.

 67. “Sign and ray patterns that allow k-potence”, Special Session on Theory and Applications of

 Linear Algebra, AMS Western Section Meeting, Pullman, WA, May, 2017.

 68. “Sign and ray patterns that allow k-potence”, Pacific Northwest Section of the MAA annual

 conference, Spokane, WA, June, 2017.

 69. “Algebra and eigenvalues, Western Canada Linear Algebra Meeting, Pullman, WA, May, 2018.

##  Invited Talks and Colloquia:

 1. “M-matrices and their powers”, University of Puerto Rico at Rio Piedras, San Juan, Puerto Rico,

 February, 1986.

 2. “M-matrices and their powers”, St. Lawrence University, Canton, New York, March, 1986.

 3. “M-matrices and their powers”, College of William and Mary, Williamsburg, Virginia, April, 1986.

 4. “M-matrices and their powers”, Northern Illinois University, DeKalb, Illinois, April, 1986.

. 5. “M-matrices and their powers”, University of Southern Mississippi, February, 1987.

 6. "Powers of matrices", Biological Sciences Graduate Student Association Invitational Colloquium,

 University of Southern Mississippi, Hattiesburg, Mississippi, October, 1987.

 7. “The inflation product: a new tool for matrix construction”, University of West Florida, Pensacola,

 Florida, April, 1989.

 8. “Matrices that commute with a permutation matrix”, Eastern Tennessee State University, Johnson

 City, Tennessee, November, 1989.

 9. “How big is infinity?”, Kappa Mu Epsilon Colloquium, University of West Florida, Pensacola,

 Florida, March, 1991.

 10. “Inflation (Double-Crossed?)”, Institute for Mathematics and its Applications, University of

 Minnesota, Minneapolis, Minnesota, December, 1991.

 11. “Circulants and their generalizations”, California State University at Fresno, Fresno, California,

 April 1995.

 12. “Matrices whose structure is preserved by powers”, Georgia State University, Atlanta, Georgia,

 February 1996.

 13. “Qualitative matrix theory: sign patterns, invertibility and other matrix properties”, Texas Tech

 University, Lubbock, Texas, March, 1997.

 14. “How big is infinity?”, Texas Tech University, Lubbock, Texas, March, 1997.

 15. “Qualitative matrix theory: sign patterns, invertibility and other matrix properties”, University of

 Colorado, Denver, Colorado, July, 1997.

 16. "Solving cubic and higher order equations", Texas Tech University, Lubbock, Texas, March, 1998.

 17. "Some inflated results", Texas Tech University, Lubbock, Texas, March, 1998.

 18. "Why good students get bad AP Calculus scores", University of Southern Mississippi, Hattiesburg,

 Mississippi, July, 1998.

 19. "Tournaments", Georgia State University, Atlanta, Georgia, August, 1998.

 20. "Matlab – A Tutorial", State University of West Georgia, Carrolton, Georgia, October, 1998.

 21. "Matlab – A Tutorial", University of Southern Mississippi, Hattiesburg, Mississippi, January, 1999.

 22. "Why good students get bad AP Calculus scores", University of Southern Mississippi, Hattiesburg,

 Mississippi, March, 1999.

 23. "Tournaments: Easy questions, hard answers", Trinity University, San Antonio, Texas, October,

 1999.

 24. "Why good students get bad AP Calculus scores", Mississippi Council of Teachers of Mathematics,

 Annual Conference, Hattiesburg, Mississippi, November, 1999.

 25. "Matrices with displacement structure", Scientific Computing Seminar Series, University of

 Southern Mississippi, Hattiesburg, Mississippi, January, 2000.

 26. "Tournaments: Easy questions, Hard answers", Texas Tech University, Lubbock, Texas, March,

 2000.

 27. "The Lovasz-Winkler stopping time algorithm for hidden Markov processes", The Rocky

 Mountain Mathematics Consortium Summer Workshop on Probabilistic Combinatorics, University

 of Wyoming, Laramie, Wyoming, June, 2000.

 28. “Sign patterns, ray patterns and invertibility”, Trinity University, San Antonio, Texas, February,

 2001.

 29. “Robbing stagecoaches, eavesdropping and other adventures in graph theory”, Trinity University,

 San Antonio, Texas, February, 2001.

 30. “Tournaments: Easy questions, Hard answers”, Pacific Lutheran University, Tacoma, Washington,

 February, 2001.

 31. “Robbing stagecoaches, eavesdropping and other adventures in graph theory”, Pacific Lutheran

 University, Tacoma, Washington, September, 2001.

 32. “Qualitative matrix theory – Sign patterns and ray patterns”, Portland Area Graph Theory and

 Combinatorics Seminar, Portland, Oregon, February, 2002.

 33. "Thinking outside and inside the box – Two views of optimization (Part I)", Pacific Lutheran

 University, Tacoma, Washington, September, 2002.

 34. "Tournaments: How to tell the winners from the losers", University of Puget Sound, Tacoma,

 Washington, October, 2002.

 35. “How unlucky can you get?”, Pacific Lutheran University, Tacoma, Washington, February, 2003.

 36. “MathSciNet: Your search begins here”, Pacific Lutheran University, Tacoma, Washington,

 September, 2004.

 37. “Robbing stagecoaches and listening to other people’s phone conversations”, Washington State

 University, Pullman, Washington, September, 2006.

 38. “From Perron-Frobenius to Google PageRank”, Washington State University, Pullman,

 Washington, October, 2006.

 39. “How strong is your graph?”, Pacific Lutheran University, Tacoma, Washington, February, 2007.

 40. “Insurance models for environmental risks”, Interdisciplinary Seminar in Risk, Pacific Lutheran

 University, Tacoma, Washington, February, 2007.

 41. “Inverses for matrices that don’t have inverses”, Pacific Lutheran University, Tacoma, Washington,

 September, 2008.

 42. “The math placement system at PLU”, Pacific Lutheran University, Tacoma, Washington,

 March, 2010.

 43. “Graphs, patterns and powers – from nonnegative matrices to nonpowerful ray patterns”,

 Minisymposium on Nonnegative Matrices, 16th ILAS Meeting, Pisa, Italy, June, 2010.

 44. “Special families of matrices”, Minisymposium in Honor of Miroslav Fiedler, Seventeenth ILAS

 Conference, Braunschweig, Germany, August, 2011.

 45. “Probability, graphs and good business”, Pacific Lutheran University, Tacoma, Washington,

 October, 2011.

 46. “Twenty five billion reasons to study linear algebra”, Pacific Lutheran University, Tacoma,

 Washington, April 2012.

 47. “Twenty Years After the LASCG Report -- What is in our Textbooks and our Courses?”, Linear

 Algebra Education Minisymposium, Eighteenth ILAS Conference, Providence, Rhode Island,

 June 2013.

 48. “How a firm's organizational structure impacts the business mistakes it makes”, Boeing Corporation

 Mathematics Group Colloquium, Seattle, Washington, October 2014.

**SERVICE TO THE PROFESSION:**

**Professional Organizations and Conference Service**

 Member, MAA Textbook Series Committee, 2016 --

 Chair, International Linear Algebra Society (ILAS) Nominations Committee, 2011

 Ex-Officio Member, ILAS Executive Board, 2009 – 2010

 Secretary – Treasurer, ILAS, 2000 – 2009 (elected to three 3-year terms)

 Assistant Treasurer, ILAS, 1992 – 2000

 Member, ILAS Education Committee, 1996 – 2002

 Web Administrator, ILAS Education Resources Web Site, 1997 – 2002

 Vice President, Mississippi Chapter, American Statistical Association, 2000 – 2001.

 Member, Organizing Committee, Fifteenth ILAS Conference, Cancun, Mexico, 2008.

 Member, Organizing Committee, Seventh ILAS Conference, Madison, Wisconsin, 1998.

 Member, Organizing and Local Arrangements Committees, ILAS Conference - “Linear Algebra:

 The New Generation”, Pensacola, Florida, 1993.

 Organizer, special session, “Teaching Techniques and Tricks”, MAA Pacific Northwest Section

 Meeting, Corvallis, Oregon, April, 2016.

 Organizer, special session, “Pedagogical Gems”, MAA Pacific Northwest Section meeting,

 Seattle, Washington, April, 2010.

 Co-organizer, minisymposium, "Interactive linear algebra texts", at the Seventh ILAS Conference,

 Madison, Wisconsin, 1998.

 Co-organizer, minisymposium, “Centrosymmetric matrices and their generalizations” at the SIAM

 Fourth Applied Linear Algebra Conference, Minneapolis, Minnesota, September, 1991.

 Session chair at thirteen mathematical conferences, 1988 - 2016.

**Editorial, Referee and Review Service**

 Editor, Special Issue (2008 ILAS Conference) for *Linear Algebra and its Applications*.

 Editor, *Transactions,* Division of Mathematics, Computer Science and Statistics,

 Mississippi Academy of Sciences, 1996 and 1997.

 Referee for 120 papers (not counting revisions) 67 papers for Linear Algebra and its Applications. 13 papers for Linear and Multilinear Algebra. 7 papers for SIAM Journal on Matrix Analysis.

 5 papers for Electronic Journal of Linear Algebra – ELA

 5 papers for Discrete Mathematics

 6 papers for MAA Monthly

 3 papers for Journal of Computational and Applied Mathematics

 2 papers for Applied Mathematics Letters

 1 paper for the Czech Mathematics Journal

 1 paper for Journal of Combinatorial Theory - Series B.

 1 paper for Acta Mathematica Sinica

 1 paper for International Journal of Mathematics and Mathematical Sciences

 1 paper for International Journal of Mathematical Education in Science and Technology

 1 paper for AMATYC Review

 1 paper for the College Math Journal

 1 paper for Utilitas Mathematica

 1 paper for Southeastern Asia Bulletin of Mathematics

 2 papers for Linear Algebra in Signals, Systems and Control, edited by B.N. Datta, et al., 1988

 2 books for the MAA Textbook Committee

 Reviews:

 20 article reviews for AMS Math Reviews.

 1 book review for SIAM Review.

 2 book reviews for IMAGE

 1 book review for the Monthly

 12 pre-publication textbook reviews

 3 federal grant proposals

**Other Service to the Profession**

 External Ph.D. dissertation reviewer for Indian Institute of Technology Mumbai, January 2018

 External Reviewer for the California Lutheran University Mathematics Department, January, 2014

 External Tenure Review Consultant for Willamette College, October, 2011

 Regular Respondent, AP Calculus and AP Statistics Newsgroups, 1998 – 2012

 Participant, “Engaging Students and Ensuring Success in Today’s Math Courses”, Wiley Faculty

 Network Workshop, San Francisco, February, 2011.

 External Expert Consultant on a National Science Foundation Grant, 2009

 Reader, Educational Testing Service Advanced Placement Calculus Exam, 1998 - 2001, 2005 – 2006

 Regular Respondent, MATLAB user group, 1998 – 2001

 Participant, ATLAST Advanced MATLAB Educational Applications Development Workshop,

 University of California at San Diego, June 1994.**COURSES TAUGHT**

**PACIFIC LUTHERAN UNIVERSITY**

**Fall 2001 – Fall 2018**

**Mathematics Department**

 Math 107 Mathematics Explorations (Math for Liberal Arts) (2x)

 Math 128 Linear Models and Calculus (Math for Business) (7x)

 Math 140 Pre-calculus (5x)

 Math 145 Introductory Biostatistics (4x) **\***

 Math 151 Calculus I (4x)

 Math 152 Calculus II (14x)

 Math 230 Matrix Algebra (half semester)

 Math 240 Introduction to Probability (half semester)

 Math 253 Multivariable Calculus (2x)

 Math 331 Linear Algebra (25x)

 Math 341 Mathematical Statistics (3x)

 Math 342 Probability Theory (2x)

 Math 348 Regression and ANOVA

 Math 356 Numerical Analysis (3x)

 Math 381 Putnam Problem Solving Seminar

 Math 381 Math Modeling Competition Seminar (2x)

 Math 391 Special Topics: Financial Mathematics **\***

 Math 411 Mathematics of Risk (Introduction to Mathematical Finance) (7x) **\***

 Math 455 Mathematical Analysis (3x)

 Math 499 Capstone Seminar (4x)

**School of Business**

 **Masters of Finance Program**

 BMSF 507 Mathematics and Stochastics for Finance (6x) **\***

 BMSF 538 Risk Management (5x) **\***

**School of Nursing**

 **Doctorate in Nursing Practice Program**

 NURS 625 Epidemiology/Biostatistics for the DNP (co-taught) **\***

**\* I developed these courses.**

**UNIVERSITY of SOUTHERN MISSISSIPPI**

**Fall 1987 – Spring 2001**

 College Algebra (Experimental “Reform” section) (2x) **\***

 Trigonometry (6x)

 Calculus (3 hour - "Traditional") I

 Calculus (3 hour - CCH “reformed” calculus) I (2x), II

 Calculus (5 hour - "Traditional") I (2x), II (2x)

 Multivariable Calculus (CCH "reformed" calculus)

 Discrete Math

 Introductory Matrix Theory (4x)

 Linear Algebra I (3x), II (4x)

 Combinatorics

 Graph Theory (2x)

 Linear Programming (5x)

 Nonlinear Optimization (3x)

 Numerical Analysis I (2x), II (2x)

 Mathematical Probability and Statistics I (4x), II (4x)

 Advanced Calculus I (2x), II (2x)

 Graduate Topics: Numerical Methods for Matrix Theory (4x) **\***

 Graduate Topics: Combinatorics

 **\* I developed these courses.**

**UNIVERSITY of WEST FLORIDA, Pensacola**

**Spring, 1999**

 Set Theory and Logic

**GEORGIA STATE UNIVERSITY, Atlanta**

**Fall, 1998**

 Linear Algebra II

**NORTHERN ILLINOIS UNIVERSITY**

**Fall 1986 – Spring 1987**

 Finite Mathematics (2x)

 Linear Algebra (2x)

**PLU Senior Capstone Projects**

I have directed 57 senior capstone projects at PLU. Topic distribution: graph theoretic topics, (9); matrix theoretic topics, (8); statistical topics (10); combinatorics, (3); actuarial science and mathematical finance, (25), other (3).

 Matthew Gabelle “Developing Algorithms for Finding Hamiltonian Cycles in Complete,

 Multipartite Graphs”, May, 2002.

 Jennifer Makenas “Ramsey Theory”, May, 2002.

 Dawn Schoenenberger “The Optimal Pebbling Number for Various Graphs”, May, 2002

 Lora Hendrickson “The Four Color Theorem”, December, 2002

 Bjorn Larsen “Who is #1? Ranking Round Robin Tournaments”, May 2003

 Darrel Rohar “An Introduction to Subspace Iteration and the QR Algorithm”, May, 2003

 Reid Wiggins “Shortest Path Algorithms”, May, 2003

 Kathy Kellog, “AR(p) Models in Time Series”, May, 2004

 Matthew Honstain, “Logistic Regression and Categorical Data Analysis”, May, 2004

 Charles Dorner, “Generalizations of Pascal’s Triangle”, May, 2004

 Chester Boyles, “Generalized Inverses and Least Squares”, May, 2005

 Leanna Christian, “Multivariate Statistical Analysis: Applications to Tourist

 Preferences”, May, 2005

 Mark Oliver, Markov Chains, May, 2006

 Shandra Crosby, “Improved Confidence Intervals for Binomial Probabilities”, May, 2006

 Bryce Ageno, “The Traveling Salesman Problem”, May, 2007

 David Pedack, “Options Pricing and the Black-Scholes Merton Model”, May, 2007

 Ingrid Stegemoeller, “Surveys and Stratified Sampling”, May, 2007

 Tony McCarthy, “Probability, Blackjack and Card Counting”, December, 2007

 Richard King, “Financial Time Series and ARIMA Models”, December, 2008

 Tom Swenson, “Optimal Portfolio Theory”, May, 2009

 Kimberly Wheeler, “Applied Statistics: An Examination of Correlation with an Application

 at the Washington Department of Licensing”, May, 2009

 Charlette Knott, “Methodology of the Russell Indexes”, August, 2009

 Briet Johnson, “Measuring Honduran Microfinance Institution Efficiency Using Principal

 Component Analysis”, May, 2010.

 Michael Manser, “Fixed Income Fixes: Duration, Convexity and Immunization”, May, 2010.

 Brian McFadden, “Futures and Forwards, Rebalatization and Hedging”, May, 2010.

 Ben Perry, “Forecasting Financial Asset Returns Using Markov-Switching Models

 to Forecast U.S. Microcap Stock Returns”, May, 2010.

 Justin Peterson, “Approximating Return Attribution”, May, 2010.

 Xiaoqian Zhang, “The Capital Asset Pricing Model and the Fama French Model”, May, 2010.

 Pu Zheng, “The Black-Litterman Model”, December, 2010.

 Brad Ballinger, “Kalman Filters”, May, 2011.

 Rachel Chong, “A Study of ARCH and GARCH Effects in the International Financial

 Markets”, May, 2011.

 Rajbir Kaur, “The Mathematics of Creating an Index—the Impact of Russell Indexes

 Design”, May, 2011.

 Larisa Zimoglyad, “How to Value Options with a Jump Component”, May, 2011.

 Lauren Hathaway, “The Health Care Debate: PPO versus HDHP with HAS”, August, 2011.

 Alex Lewis, “Digital Image Processing”, December, 2011.

 Brianne Vincent, “Modern Portfolio Theory versus Risk Balanced Portfolio Investing”,

 February, 2013.

 Samantha Potter, “How Actuaries Determine Loss Reserves”, December, 2013.

 Kennedy Anderson, “Forbidden Induced Subgraphs of Unit Disk Graphs”, May, 2014.

 Josh Olsen, “Linear Programming and Applications”, May, 2014.

 Matthew Ostendorf, “Statistics in Practice: an Internship at a Market Research,

 Company”, May, 2014.

 Sydney Currier, “Using Logistic Regression to Predict the Possibility of Breast

 Cancer”, May, 2015.

 Andrew Koval, “Linear, Multivariate and Logit Models”, May, 2015.

 Kevin McCrossin, “Tournament Matrices and Ranking Schemes”, May 2015.

 Jose Bonilla-Bartley, “Graphs and Trucking Distribution”, May, 2016.

 James Creek, “The Five Color Theorem”, May, 2016.

 Dominique Jackson, “Time Series and Forecasting”, May, 2016.

 Hayden McCartney, “Deriving the Black-Scholes Formula from Binomial Trees”, May, 2016.

 Ryne Wilmes, “Modeling Volatility for Optimal Investment Strategies”, May, 2016.

 Brendan O’Briant, “Fuzzy Logic, Neural Nets and Market Prediction”, December, 2016

 Desiree Domini, “Modeling Economic Time Series Volatility with ARCH and GARCH”, May, 2017.

 Collin Greer, “Linear Programming”, May, 2017.

 Liz Holm, “Tournament Matrices”, May, 2017.

 Hailai Schatz, “Ordinary Differential Equations and Economics”, May, 2017.

 Tiara Spraggin, “Normality and Modern Portfolio Theory”, May, 2017.

 Angela McCain, “Reinsurance and Collective Claims Models”, May, 2018.

 Yanying Pan, “The Black-Litterman Model”, May, 2018.

 Charles Sonnenberg, “Logistic Regression”, May, 2018.

**PLU Independent Study Courses**

I have directed four independent study courses at PLU:

 Reid Wiggins, Math 433 (Abstract Algebra), Spring 2003

 Darrel Rohar, Math 331 (Linear Algebra), Summer-Fall 2003

 Nicholas Carabello, Math 331 (Linear Algebra), Spring 2010

 Magnus Nyboe, Math 491 (Stochastic Calculus), Summer 2013

 Angela McClain and Yanying Pan, Math 411 (Mathematics of Risk), Fall 2017

I have written more than a dozen credit-by-exam evaluations for Math 128, 151, 152, 253, 331, 411, 433 and 455.

**PLU Masters of Finance Capstones**

I have directed six capstone projects for the PLU Masters of Finance program.

 John Buckley, “Hops Hedging at Independent Breweries in the Pacific North West”, June, 2013.

Brian McFadden, “Optimal Pricing for Call Overwriting”, June, 2013.

Mint Noosamien, “Hedging Asian Equity Portfolios with Native FX Positions”, June, 2014.

 Evan Turner, “A Corruption Index for Listed US Securities”, June, 2014.

 Jianyang Ding, “Comparisons in the US Fast Food Industry”, June, 2015.

 Nathan Hu, “Buy-And-Hold Trumps Shannon’s Demon”, June, 2015.

**Student Research, Senior Theses and Masters Theses at USM**

I directed three undergraduate student research projects at USM. The first project was in linear complementarity, and it led to student paper session presentations at one regional and one national conference. The second was in graph theory, and led to an honors thesis and five student paper presentations at regional conferences. The third was in combinatorial matrix theory, and led to one student presentation at a regional conference. I co-directed a master’s thesis on interior point methods for linear programming. I also directed a master’s level research project at USM on homotopy methods for the computation of eigenvalues that led to two student presentations at regional conferences. I directed one undergraduate reading course: Probability and Statistics I.

 David Sitton, "Maximum Matchings for Complete, Multipartite Graphs", Honors Thesis, May, 1995.

 Allen Holder, "Three Interior Point Methods and Their Performance on Small, Dense Problems",

 Masters Thesis, December, 1993.

# SERVICE AT PACIFIC LUTHERAN UNIVERSITY

**For the University**

 Math Placement Director, May, 2004 – July, 2006, June 2008 – June 2010, July 2016 –

 Five year recalibration of PLU mathematics placement system, statistics project conducted jointly with

 Professor Emeritus Michael Dollinger, June – July, 2004

 Member, Online Student Evaluation Task Force, 2015 -- 2016

 Member, Provost’s ad-hoc Committee on International Student Success, 2011

 Member, School of Education and Movement Studies Dean Search Committee, 2010 – 2011

 Member, Construction Steering Committee for the Morken Center, 2004 – 2006

**For the Division of Natural Sciences**

 Candidate, Dean of Natural Sciences, Fall 2016

 Chair, Biostatistics Course Development Committee 2010 – 2011

 Member, Academic Festival Committee, 2002 – 2005

**For the Mathematics Department**

 Chair, statistics search committee, 2016 – 2017

 Chair, visiting position search committee, Spring 2016

 Department Chair, July 2010 – July 2013

 Acting Department Chair, June 2006, November 2009 – January 2010

 Chair, Curriculum Committee, 2005 – 2006, 2009 – 2010, 2013 – 2017.

 Member, Assessment Committee, 2002 – 2005

 Financial Mathematics major advisor and internship capstone supervisor, 2008 –

 Statistics advisor, 2005 – 2009

 Actuarial Science advisor, 2001 –

 Member, NSF grant proposal development committee, 2002 – 2003

 Math seminar coordinator, 2001 – 2003, 2011 – 2013

 Member, math search committee, 2001 – 2002, 2007 – 2008, 2008 – 2009, 2012

 Participant, Maple and WeBWorK workshops, 2004, 2005, 2006, 2007

**For the School of Business**

 Member, Masters in Finance Program Development Committee 2010 -- 2012

 Member, Masters in Finance Admissions Committee 2012 -- 2014

 Member, Accounting Search Committees, 2012, 2014

 Member, Finance Search Committees, 2005, 2006

 Co-Developer, with Professor Bruce Finnie in the School of Business, of the Financial

 Mathematics Major, 2005 – 2007

**Other**

 High school science fair judge, 2005

 Member, PLU Choral Union, 2001 – 2006, 2008 – 2011

# SERVICE AT THE UNIVERSITY OF SOUTHERN MISSISSIPPI

For the University:

 Member, Faculty Summer Grant Proposal Review Committee, 1999, 2000 Member, Teaching, Learning and Technology Advisory Committee, 1997 – 1998

 Member, USM Team, Regional Teaching, Learning and Technology Roundtable Workshop, 1996

 Member, University Parking Task Force, 1992 – 1994 Chair, Parking Policy Revision Committee, 1992 – 1994 Member, Faculty Senate, 1992 Member, University Honors Committee, 1990

 Member, Undergraduate Admissions and Credits Review Committee, 1988 – 1991

 Advisor, USM Chapter, Phi Sigma Pi National Honor Fraternity, 1996 – 1998

 Advisor, USM Cycling Club, 1992 – 1994 (founding advisor)

 Member, University Symphony Chorus, 1987 – 2000

# For the College of Science & Technology (CoST):

 Chair, CoST Faculty Summer Grant Proposal Review Committee, 1990, 1993, 1999, 2000

 Member, Scientific Computing PhD Curriculum Committee, 1999 – 2001 Member, School of Mathematical Sciences Council, 1995 – 1998 Member, CoST Teaching and Learning Task Force, 1995 – 1996 Mentor, CoST Freshman Mentor - Mentee Program, 1994 – 1996 Judge, Regional Science Fair, 1989

For the Department of Mathematics:

 Chair, Promotion Committee for Dr. Redfern, 1999 – 2000 Chair, Graduate Curriculum Committee, 1988 - 1998, 1999 – 2001 Chair, Honors Committee, 1992 – 1994, 1995 – 1997, 2000 – 2001 Chair, Math Achievement Award Committee, 1995 – 1996

 Member, Computer Advisory Committee, 1999 – 2001

 Member, Faculty Search Committee, 1997 – 1998

 Member, Math & Computer Science Statistics Coordinating Committee, 1995

 Member, Math Achievement Award Committee, 1988 – 1990, 1994 – 1995, 1999 – 2001

 Member, Calculus Committee, 1994

 Member, Prerequisites Committee, 1994

 Member, Teaching Effectiveness Committee, 1989 – 1993

 Member, Chair Search Coordinating Committee, 1990

 Member, Honors Committee, 1988 – 1990, 2000 – 2001

 Member, Textbook Committees for various courses

 Advisor, Kappa Mu Epsilon, 1994 – 1996

 Speaker, nine Mathematics Department Undergraduate Colloquia

I regularly advised undergraduate math majors, and I chaired and served on a number of master’s committees.

# GRADUATE COURSE WORK

(Except as noted, courses taken at the University of Wisconsin, Madison)

***Algebra*** 741. Abstract Algebra I 742. Abstract Algebra II 743. Matrix Theory 744. Algebraic Graph Theory 745. Group Theory 746. Rings and Modules 841. Finite Reflection Groups

 841. Topics in Matrix Theory

 843. Lie Algebras I

 843. Lie Algebras II

 875. Combinatorics

(Taken at Northern Illinois University, DeKalb, Illinois)

 NIU 660. Linear Systems and Control

(Taken at University of Southern Mississippi, Hattiesburg, Mississippi)

 USM 684. Network Reliability

## Analysis and Topology

 722. Complex Analysis

 751. Topology I

 752. Topology II

 753. Algebraic Topology I

 763. P-adic Analysis

 801. Asymptotic Analysis

 825. Functional Analysis

(Taken at Claremont Graduate School, Claremont, California)

 CGS 331. Real Analysis I

 CGS 332. Real Analysis II

## Computer Science

 CS 525. Linear Programming

 CS 719. Network Flows

 CS 720. Integer Programming

 CS 725. Nonlinear Programming Theory and Applications

 CS 726. Advanced Nonlinear Programming Theory

 CS 767. Graph Theory Algorithms