

CURRICULUM VITAE

JULIA L. HIGLE

Professor, Systems and Industrial Engineering
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CHRONOLOGY OF EDUCATION

B.A., Summa Cum Laude Mathematics and Physics, Albion College, Albion MI 1981.
B.S.E., Summa Cum Laude Industrial and Operations Engineering, The University of Michigan, Ann Arbor MI 1982.
Ph.D. Industrial and Operations Engineering, The University of Michigan, Ann Arbor MI 1985.
Ph.D. Dissertation: 'Deterministic Equivalence in Stochastic Infinite Horizon Problems,' (advisors: J.C. Bean and R.L. Smith).

MAJOR FIELDS

My primary research interests include the development of models and solution methods for decision making under uncertainty. Of particular interest are stochastic programming models, and algorithmic methods for their solution. Since the late 1980's, I have been heavily involved in the development, analysis, and computational evaluation of mathematical programming methods for the solution of stochastic linear, and more recently integer, programs which rely on the use of sampled data.

CHRONOLOGY OF EMPLOYMENT

1985 - 1992 *Assistant Professor*,
Systems and Industrial Engineering, University of Arizona
1992 - 1998 *Associate Professor*,
Systems and Industrial Engineering, University of Arizona
1998 - Present *Professor*,
Systems and Industrial Engineering, University of Arizona
1993 - 1994 *Sabbatical*, Princeton University
2000 - 2001 *Sabbatical*, Senter for Høyere Studier, Oslo Norway

SCIENTIFIC AND PROFESSIONAL SOCIETIES

The Institute for Operations Research and Management Science (INFORMS)
Mathematical Programming Society (MPS)

HONORS AND AWARDS

Phi Beta Kappa
Tau Beta Pi
The Society of The Sigma Xi
The University of Michigan Distinguished Scholar Award
George E. Nicholson Student Paper Competition, runner-up (Sponsored by The Operations Research Society of America)

SERVICEAdministrative

UA Financial Practices Workgroup, 2004-present
 UA Director, Arizona Tri-University Master of Engineering Program, 1998-2004
 Special Faculty Assistant to the Dean, College of Engineering and Mines, 2002-2004
 Tri-University Master of Engineering Planning Committee, 1997-1998

Intramural

UA / COEM Dean Administrative Review Committee, 2003-2004
 UA Graduate Council, 1999-2003
 UA Committee on Graduate Study, 1990-92, 1995-2003
 (Graduate Representative for Preliminary/Comprehensive Exams)
 UA Upper Division Writing Proficiency Grader, 1985-2000
 COE Director of Engineering Professional Development search committee, 2004
 COE Faculty Status Committee (Promotion and Tenure), 2003-present
 COE Millenium Review Oversight Committee, Chair, 2002-present
 COE Post-Tenure Review Audit Committee, 2002-2003
 COE College Advisory Committee, 1995-1998, 2004-present
 COE Sabbatical Review Committee, Chair, 1998
 COE Sabbatical Review Committee, 1995-1998
 COE Graduate Studies Committee, Chair, 1997-1999
 COE Graduate Studies Committee, 1996-1999, 2002-2003
 COE Ad Hoc Committee, Grad. Ed. and Research, 1991-92
 COE Ad Hoc Committee on Undergraduate Recruiting, 1992-93
 ELITE Faculty Advisor (BA Eng. students), 1996-2000
 SIE Faculty Search Committee, Chair, 2003-2004
 SIE Academic Program Review Chair, 1999-2000
 SIE Committee on Operations Research (ad hoc) Chair, 2001-present
 SIE Seminar Coordinator, 1994-95
 SIE Peer Review Committee 1998-2000
 SIE Graduate Committee 1985-90, 1995-2002
 SIE Graduate Committee Chair 1987-88, 1996-97, 1998-2000, 2002
 SIE Undergraduate Committee, 1990-92
 SIE Undergraduate Faculty Advisor, 1990-92
 SIE Faculty Search Committee, 1989-90, 1990-91
 SIE Academic Review Committee, 1986-87
 Affiliate Member, Applied Math. Program, 1995-present
 Society of Manufacturing Engineers Faculty Advisor, 1985-87

Extramural

Program Chair, Tenth International Conference on Stochastic Programming, (Tucson, AZ 2004)
 Program Chair, IFIP/NSF Workshop on Stochastic Programming, Jan. 1996
 Associate Editor, *Operations Research* 1996-2000
 Associate Editor, *Operations Research Letters* 1999-present
 Associate Editor, *Omega* 2004-present
 Guest Editor, *Computational Optimization and Applications* 2002-2003
 Co-Editor, *Annals of OR*, Stochastic Programming Models and Applications (1996).
 Co-Editor SPEPS, Stochastic Programming E-Print Series, 2003-present
 Natural Sciences and Engineering Research Council of Canada, GSC-20, 2004-present
 (NSERC Industrial Engineering Grant Selection Committee)
 INFORMS Section on Optimization Vice Chair, 1995-1999
 Stochastic Programming Cluster Chair, INFORMS National Conference
 San Antonio Nov. 2000, Cincinnati May 1999, Montreal May 1998,

San Diego April 1997, Atlanta Nov. 1996
 Stochastic Programming Cluster Chair, ORSA/TIMS Joint National Conference,
 Phoenix Nov. 1993, San Francisco Nov. 1992
 International Program Committee member, Eighth International Conference on
 Stochastic Programming, 1995-1998 (Vancouver, British Columbia)
 International Federation for Information Processing (IFIP)
 Working Group TC 7.7 (Stochastic Optimization) 1996-present
 National Science Foundation Proposal Review Panelist, 1995, 1998, 2001
 National Cooperative Highway Research Program, Project Panel 7-13 1991-1997
 Transportation Research Board Committee A3A12, "Methodology for Evaluating Highway Improvements",
 member, 1989-2001
 Women in Science and Engineering "mentor", 1990-91
 ORSA Student Activities Committee, 1986-88

Referee for the following archival journals: *Management Science*, *Operations Research*, *Mathematical Programming*, *INFORMS Journal on Computing*, *IIE Transactions*, *European Journal of Operational Research*, *IEEE Transactions on Reliability*, *JASA*, *Transportation Research Record*, *Annals of Operations Research*, *Computational Optimization and Applications*, *Naval Research Logistics Quarterly*, and others.

Individual Proposal Reviewer for the National Science Foundation and the Natural Sciences and Engineering Research Council of Canada.

PUBLICATIONS

Scholarly Books and Edited Volumes

- [1] *Stochastic Decomposition: A Statistical Method for Large Scale Stochastic Linear Programming*, with S. Sen, Kluwer Academic Publishers, 1996.
- [2] *Stochastic Programming, Algorithms and Models*, S.W. Wallace, J.L. Higle, and S. Sen (eds.), special issue of *Annals of Operations Research*, vol. 64, 1996.
- [3] *Computational Optimization and Applications*, special issue on stochastic programming, vol. 24, nos.2-3, 2003.

Chapters in Scholarly Books

- [4] 'Solution of Large Scale Stochastic Programs with Stochastic Decomposition Algorithms', with S. Sen and J. Mai, in *Large Scale Optimization: State of the Art 1993*, W.W. Hager, D.W. Hearn, and P.M. Pardalos, Eds., Kluwer Academic Publishers, 1994.
- [5] 'Stochastic Linear Programming: Decomposition and Cutting Planes', with S. Sen, in *The Encyclopedia of Optimization*, Kluwer Academic Publishers.
- [6] 'Stabilization of Cutting Plane Algorithms for Stochastic Linear Programming Problems', with S. Sen, in *The Encyclopedia of Optimization*, Kluwer Academic Publishers.
- [7] 'Algorithmic Implications of Duality in Stochastic Programs', with S. Sen, in *System Modelling and Optimization*, M.J.D. Powell and S. Scholtes, Eds., Kluwer Academic Publishers, 2000.
- [8] 'A Summary and Illustration of Disjunctive Decomposition with Set Convexification', with S. Sen and L. Ntamo, *Network Interdiction and Stochastic Integer Programming*, D. Woodruff (ed.), Kluwer Academic Publisher, [2002].
- [9] 'A Stochastic Programming Model for Network Resource Utilization in the Presence of Multi-Class Demand Uncertainty', with S. Sen, to appear in *Application of Stochastic Programming*, SIAM Series on Optimization, W.T. Ziemba and S.W. Wallace, Eds.

Papers Accepted or in Print

- [10] 'Bayesian Identification of Hazardous Locations,' with J.M. Witkowski, with discussions by E. Quaye,

- C. Morris, and O. Pendleton *Transportation Research Record 1185, Methods for Evaluating Highway Improvements*, pp. 22-36, 1988.
- [11] ‘A Comparison of Techniques for the Identification of Hazardous Locations,’ with M.B. Hecht, *Transportation Research Record, #1238, Application and Management of Accident Data*, pp. 10-19, 1989.
- [12] ‘A Note on the Sensitivity of the EOQ,’ *IIE Transactions*, Vol. 21, no. 3, pp. 294-297, 1989.
- [13] ‘Deterministic Equivalence in Stochastic Infinite Horizon Problems,’ with J.C. Bean and R.L. Smith, *Mathematics of Operations Research*, vol. 15, no. 3 pp. 396-407, 1990.
- [14] ‘Production Planning When Demand is a Stochastic Process,’ *European Journal of Operational Research*, vol. 50, no. 3, pp. 257-265, 1991.
- [15] ‘Stochastic Decomposition: An Algorithm for Two Stage Linear Programs with Recourse,’ with S. Sen, *Mathematics of Operations Research*, vol. 16, no. 3, pp. 650-669, 1991.
- [16] ‘Statistical Verification of Optimality Conditions,’ with S. Sen, *Annals of Operations Research*, vol. 30, pp. 215-240, 1991.
- [17] ‘On the Convergence of Algorithms with Implications for Stochastic and Nondifferentiable Optimization,’ with S. Sen, *Mathematics of Operations Research*, vol. 17, no. 1, pp. 112-131, 1992.
- [18] ‘Economic Investment Times for Capacity Expansion Problems,’ with C. Corrado *European Journal of Operational Research*, vol. 59, no. 2, pp. 288-293, 1992.
- [19] ‘Capacity Expansion Under Stochastic Demands,’ with J.C. Bean and R.L. Smith *Operations Research*, vol. 40, no. S2, pp. S210-216, 1992.
- [20] ‘Observational Studies of Rare Events: A Selection Approach,’ with S. Sanchez, *Journal of the American Statistical Association*, vol. 87, pp. 878-883, 1992.
- [21] ‘Inexact Subgradient Methods with Applications in Stochastic Programming,’ with K.T. Au and S. Sen *Math. Programming*, vol. 63 no. 1, pp. 65-82, 1994.
- [22] ‘Conditional Stochastic Decomposition: An Algorithmic Interface for Simulation and Optimization,’ with W. Lowe and R. Odio, *Operations Research*, vol. 42, no. 2, pp. 311-322, 1994.
- [23] ‘Finite Master Programs in Regularized Stochastic Decomposition,’ with S. Sen *Math. Programming*, vol. 67, pp. 143-168, 1994.
- [24] ‘Epigraphical Nesting: A Unifying Theory for the Convergence of Algorithms,’ with S. Sen, *J. of Optimization Theory and Applications* vol. 84, no. 2, pp 339-360, 1995.
- [25] ‘Statistical Approximations for Recourse Constrained Stochastic Programs,’ with S. Sen, *Annals of Operations Research*, vol. 56, pp. 157-175, 1995.
- [26] ‘Duality and Statistical Tests of Optimality,’ with S. Sen, *Math. Programming*, vol. 75, pp. 257-276, 1996.
- [27] ‘Variance Reduction and Objective Function Evaluation in Stochastic Linear Programs,’ *INFORMS Journal of Computing* vol. 10, no. 2, pp. 236-247, 1998.
- [28] ‘An Introductory Tutorial on Stochastic Linear Programming: I (Modeling),’ with S. Sen, *Interfaces*, vol. 29, no. 2, pp. 33-61, 1999.
- [29] ‘Statistical Approximations for Stochastic Linear Programming Problems,’ with S. Sen, *Annals of Operations Research* vol. 85, pp. 173-192, 1999.
- [30] ‘Duality Gaps in Stochastic Integer Programming,’ with S. Sen and J.R. Birge, *J. of Global Optimization*, vol. 18, pp. 189-194, 2000.
- [31] ‘Managing risk in the new power business – a sequel,’ with S.W. Wallace, *IEEE Computer Applications in Power*, vol. 15, no. 2, 2002.
- [32] ‘Sensitivity Analysis and Uncertainty in Linear Programming,’ with S. W. Wallace, *Interfaces*, vol. 33,

no. 4, pp. 53-60, 2003.

- [33] ‘Multistage Stochastic Programs: Duality and Its Implications’, with S. Sen, to appear *Annals of Operations Research*.
- [34] ‘The C^3 Theorem and a D^2 Algorithm for Large Scale Stochastic Integer Programming: Set Convexification, with S. Sen, *Math. Programming*, vol. 104, no. 1, pp. 1-20, 2005.

Papers Under Review

- [35] ‘A Stochastic Scenario Decomposition Algorithm for Multistage Stochastic Linear Programming,’ with S.Sen and B. Rayco, submitted to *Annals of Operations Research*.
- [36] “Adaptive and Nonadaptive Samples in Solving SLPs: A Computational Investigation”, with L. Zhao, submitted to *Computational Optimization and Applications*.
- [37] “Flight Schedule Planning with Maintenance Considerations: An Integrated Approach”, with A. Johnson, submitted to *OMEGA*.
- [38] “Stochastic Programming: Optimization when Uncertainty Matters”, (to appear as an INFORMS Tutorial Paper).

Work in Progress

- [39] “Mining the Matrix: Data Mining Techniques in the Solution of IPs”.
- [40] “Revenue Management with Origin-Destination Demand: A Stochastic Programming Approach”.
- [41] “Production Planning under Supply and Demand Uncertainty: A Stochastic Programming Approach”, with K.G. Kempf.
- [42] “A Practical Guide to Stochastic Programming”, with D. Morton and S. Sen, (to be published by Kluwer Academic Publishers).

Conference Proceedings

In the following, only those papers for which conference proceedings are the most significant outlet are listed.

- [43] ‘Engineering with a Liberal and Technical Education (ELITE)’, with W.R. Ferrell, J.B. Goldberg, and S. Sen, *Proceedings of Conference on Frontiers in Education*, 1996.
- [44] ‘Bachelor of Arts in Engineering: Endless Possibilities’, with W.R. Ferrell, J.B. Goldberg, K.L. Head, and S. Sen, *ASEE-PSW Conference Proceedings*, 1997.

Scholarly Presentations

Major Presentations

- [1] ‘Statistical Methods in Stochastic Programming: A Tutorial’, IFIP/NSF Workshop on Stochastic Programming, Tucson AZ, Jan. 1996.
- [2] ‘Modeling Stochastic Programs: A Tutorial’, Industrial Engineering Research Conference, Minneapolis MN, May 1996.
- [3] ‘Modeling Stochastic Programs’, Tutorial presentation, INFORMS Meeting, Montreal Quebec, May 1998.
- [4] ‘Modeling Stochastic Programs: A Case Study Approach,’ a tutorial session presented at the 8th International Conference on Stochastic Programming, August 1998, Vancouver, British Columbia.
- [5] ‘Statistical Approximations for Stochastic Linear Programming Problems,’ a plenary address presented at the 8th International Conference on Stochastic Programming, August 1998, Vancouver, British Columbia.
- [6] ‘Duality in Multistage Stochastic Programs’, Prague Stochastics ’98 (the joint session of the 6th Prague Symposium on Asymptotic Statistics and the 13th Prague Conference on Information Theory, Statistical

Decision Functions and Random Processes), Prague Czech Republic, August 1998.

- [7] ‘Algorithmic Implications of Duality in Stochastic Programming,, a plenary address presented at the 19th IFIP TC7 Conference on System Modelling and Optimization, Cambridge UK, July 1999.
- [8] ‘Tutorial: Beyond Sensitivity Analysis - An Introduction to Stochastic Programming’, INFORMS Meeting, Miami FL, November 2001.

Other Presentations (representative, but not exhaustive)

- [9] ‘Capacity Expansion When Demand is a Stochastic Process,’ ORSA/TIMS Joint National Meeting, November 1983, Orlando FL.
- [10] ‘Deterministic Equivalence in Stochastic Infinite Horizon Problems,’ ORSA/TIMS Joint National Meeting, November 1985, Atlanta GA.
- [11] ‘Stochastic Effects in Discounted Infinite Horizon Optimization,’ ORSA/TIMS Joint National Meeting, May 1986, Los Angeles CA.
- [12] ‘Promotion and Tenure: An Academic Game or Goal?’ (panel discussion) ORSA/TIMS Joint National Meeting, May 1987, New Orleans, LA.
- [13] ‘How to Write Research Proposals,’ (panel discussion) ORSA/TIMS Joint National Meeting, October 1987, St. Louis, MO.
- [14] ‘Stochastic Effects in a Single Location Capacity Expansion Model,’ ORSA/TIMS Joint National Meeting, October 1987, St. Louis, MO.
- [15] ‘Stochastic Decomposition: Stochastic Cutting Plane Method for Two Stage Linear Programs with Recourse,’ ORSA/TIMS Joint National Meeting, October 1987, St. Louis, MO.
- [16] ‘A Memoryless Stochastic Decomposition Algorithm for Two Stage Linear Programs’, ORSA/TIMS Joint National Meeting, April 1988, Washington DC.
- [17] ‘Algorithmic Enhancements for Stochastic Decomposition’ ORSA/TIMS Joint National Meeting, October, 1988, Denver, CO.
- [18] ‘Computational Experiments with Stochastic Decomposition’, ORSA/TIMS Joint National Meeting, May 1989, Vancouver Canada
- [19] ‘Implications of ∂ -Convergence for Stochastic Decomposition Algorithms’, Fifth International Conference on Stochastic Programming, August 1989, Ann Arbor MI.
- [20] ‘Telecommunications Traffic Network Design’, ORSA/TIMS Joint National Meeting, October 1989, New York.
- [21] ‘A Primal-Dual Method for the Determination of Step Lengths in Subgradient Optimization,” ORSA/-TIMS Joint National Meeting, May 1990, Las Vegas NE.
- [22] ‘On the Convergence of Algorithms with Applications to Stochastic and Nondifferentiable Optimization,” ORSA/TIMS Joint National Meeting, May 1990, Las Vegas NE.
- [23] ‘Two Stage Stochastic Programs with Constrained Recourse Values,’ ORSA/TIMS Joint National Meeting, October 1990, Philadelphia, PA.
- [24] ‘Conditional Stochastic Decomposition (CSD) for Stochastic Linear Programs with Recourse,’ ORSA/-TIMS Joint National Meeting, October 1990, Philadelphia, PA.
- [25] ‘A Stochastic Decomposition Approach for Convex Stochastic Programming,’ TIMS Special Interest Conference on Applied Probability in the Engineering, Information, and Natural Sciences, January 1991, Monterey, CA.
- [26] ‘Parallelization of Stochastic Decomposition Algorithms,’ ORSA/TIMS Joint National Meeting, November 1991, Anaheim CA.

- [27] ‘Inexact Primal-Dual Optimization Methods,’ ORSA/TIMS Joint National Meeting, November 1991, Anaheim CA.
- [28] ‘Computational Considerations in CSD,’ ORSA/TIMS Joint National Meeting, Nov. 1991, Anaheim CA.
- [29] ‘Activity Analysis Under Uncertainty,’ Workshop on Stochastic Programming, jointly sponsored by Daimler-Benz and IFIP Working Group no. 7, Stuttgart, Germany.
- [30] ‘Applications of Duality Theory in Designing Optimality Tests in Sampling Based Stochastic Programming Algorithms’, 6th International Conference on Stochastic Programming, September 1992, Udine Italy.
- [31] ‘Stochastic Programming in Network Planning’, ORSA/TIMS Joint National Meeting, November 1992, San Francisco CA.
- [32] ‘Epigraphical Nesting: A Unifying Theory for the Convergence of Algorithms,’ ORSA/TIMS Joint National Meeting, November 1992, San Francisco CA.
- [33] ‘Stochastic Programming in Network Planning,’ ORSA/TIMS Joint National Meeting, November 1992, San Francisco CA.
- [34] ‘An SD-Based Variance Reduction Technique’, IIASA Workshop on Approximations of Stochastic Programming Problems, International Institute on Applied Systems Analysis, July 1993, Laxenbourg Austria.
- [35] ‘Cellular Decomposition: Asynchronous Concurrent Computations for Stochastic Programs’, Workshop on Stochastic Programming, Lillehammer Norway, January 1994.
- [36] ‘Inexact Subgradient Methods with Applications in Stochastic Programming,’ Mini-Symposium on Stochastic Programming, Berlin Germany, January 1994.
- [37] ‘Stochastic Decomposition for Two Stage Stochastic Linear Programs’, Princeton University, Princeton NJ, April 1994.
- [38] ‘Duality and Statistical Tests of Optimality’, 15th International Mathematical Programming Symposium, Ann Arbor MI, August 1994.
- [39] ‘Stochastic Decomposition: An Algorithm for Stochastic Linear Programs,’ West Coast Optimization Conference, University of Washington, Seattle WA, March 4, 1995.
- [40] ‘Output Analysis for Stochastic Linear Programs,’ Workshop on Stochastic Programming, University of California – Davis, Davis CA, March 10, 1995.
- [41] ‘Multi-Stage Stochastic Decomposition,’ INFORMS Meeting, Los Angeles CA, April 1995.
- [42] ‘Statistical Tests of Optimality for Multi-Stage Stochastic Programs’, INFORMS meeting, Washington DC May 1996.
- [43] ‘Network Resource Allocation in the Presence of Multi-Class Demand Uncertainty’, INFORMS Meeting, Atlanta GA, Nov. 1996.
- [44] ‘A Stochastic Scenario Decomposition Algorithm for Multi-Stage Stochastic Linear Programs’, INFORMS Meeting Atlanta GA, Nov. 1996.
- [45] ‘A Stochastic Scenario Decomposition Algorithm for Multistage Stochastic Linear Programming’, (updated version of [17]), 16th International Mathematical Programming Symposium, Lausanne, Switzerland, August 1997.
- [46] ‘Stochastic Network Optimization for Control of Nested Demands’, 16th International Mathematical Programming Symposium, Lausanne, Switzerland, August 1997.
- [47] ‘Stochastic Scenario Decomposition (SSD): An algorithm for multistage stochastic linear programs’, INFORMS meeting, Montreal Quebec, May 1998.
- [48] ‘An Overview of Stochastic Linear Programming’, ICASE Workshop on Optimization Under Uncer-

tainty, NASA Langely, Langely, VA, July 1998.

- [49] ‘A Stochastic Scenario Decomposition Algorithm for Multistage Stochastic Linear Programming’, INFORMS Meeting, Cincinnati OH, May 1999.
- [50] ‘Algorithmic Implications of Duality in Stochastic Convex Programs’, Plenary address, 19th IFIP TC7 Conference on System Modelling and Optimization, Cambridge, UK, July 1999.
- [51] ‘Rethinking Sensitivity Analysis’, Norwegian Technological University, March 2001.
- [52] ‘Multistage Stochastic Programs: Duality and Its Implications’, Ninth International Conference on Stochastic Programming, Berlin, August 2001.
- [53] ‘Solving Stochastic Programs’, Texas A&M University, February 2002, University of Michigan, November 2003.
- [54] ‘Mining the Matrix: Applying Data Mining Techniques to Integer Programming Problems’ IFIP/SOM Workshop on Stochastic Integer Programming, Groningen, Netherlands, May 2004.
- [55] ‘Computational Experimentation with Stochastic Programming Algorithms,’ Tenth International Conference on Stochastic Programming, Tucson AZ, October 2004.
- [56] ‘Mining the Matrix’, University of Milan and University of Vienna, March 2005.
- [57] ‘Bid Price Controls with Stochastic Programming’, University of Roma - La Sapienza, March 2005.
- [58] ‘Stochastic Programming with Applications in Manufacturing’, INTEL High Volume Manufacturing Research Committee (HVM-RC) Speaker Series, March 2005.
- [59] ‘Bid Price Controls with Origin-Destination Demand: A Stochastic Programming Approach’, Mathematical Models for Optimizing Transportation Services, Auckland New Zealand, April 2005.

GRANTS AND SPONSORED PROJECTS

- [1] ‘Heuristic Methods in Applied Probability’, Air Force Office of Scientific Research Grant No. AFOSR-88-0076, 1987-1991. \$351,000 (co-principal investigator with M. Neuts).
- [2] ‘CSD: An Algorithmic Interface for Optimization/Simulation’, National Science Foundation Grant No. DDM-89-10046, 1989-1991. \$60,000 , 1990-1992.
- [3] ‘The Impact of Alternative Routing on Link Sizing in DCS Switched Networks,’ (with S. Sen), Advanced Telecommunications Research Project, College of Engineering, \$17,000, 1991-1992.
- [4] ‘Mathematical Programming Under Uncertainty: Risk and Recourse, Revisited,’ (with S. Sen), National Science Foundation, \$245,000, 1991-1994.
- [5] ‘Cellular Decomposition: A Variance Reduction Technique for SD’ (with S. Sen and S. Wallace), NATO, \$4,000, 1992-1993.
- [6] ‘Integrated Planning Under Uncertainty,’ (with S. Sen), National Science Foundation, \$301,921, 1994-1997.
- [7] ‘Stochastic Optimization Workshop’ (with S. Sen), National Science Foundation, \$20,000, 1995-1996.
- [8] ‘ELITE: A New Undergraduate Program in Engineering’, (with S. Sen, R. Ferrell, and J. Goldberg), National Science Foundation, \$681,724, 1996-2001.
- [9] ‘Performance Modeling and Optimization with Data Evolution’, (with S. Sen), National Science Foundation, \$416,000, 1999-2003.
- [10] ‘Stochastic Programming Tutorials for Doctoral Students’, National Science Foundation, \$20,000, 2003-2004.
- [11] ‘Tenth International Stochastic Programming Conference’, Air Force Office of Scientific Research, \$10,000, 2004.

- [12] 'Integrated Decomposition for Enterprise Analysis', National Science Foundation, \$195,000, 2004-2007.

GRADUATE RESEARCH SUPERVISIONPh.D. Dissertations (completed)

- [1] Steven J. Oakley, August 1990, 'Orthogonal Polynomials in the Approximation of Probability Distributions'.
- [2] Diana S. Yakowitz, December, 1990, 'Two Stage Linear Programming: Stochastic Decomposition Approaches' (with S. Sen).
- [3] Kelly T. Au, May, 1992, 'Inexact Subgradient Methods' (with S. Sen).
- [4] Wing W. Lowe, May 1994, 'Conditional Stochastic Decomposition: An Algorithmic Interface for Optimization and Simulation'.
- [5] Grant Cameron, December 1998, 'A Model and Algorithm for Sizing and Routing for DCS Switched Telecommunications Networks.'
- [6] Anne Johnson, 'Integrated Airline Planning Models', May 2005.

Ph.D. Dissertations (in progress)

- [1] Lei Zhao, 'Estimation of Solution Quality in Stochastic Programming', (expected completion date: August 2005).
- [2] Jennifer Barzeele, 'Locally Linear Approximations of Nonlinear Manifolds', (expected completion date: May 2006).

M.S. Theses/Reports (completed)

- [1] Steven J. Oakley, 'A Probabilistic Investigation of Video Poker Strategies,' (MS thesis, December, 1986).
- [2] Chih Yuan Huang, 'An Analysis of Capacity Expansion Problems with Backorders and Stochastic Demands' (MS thesis, May, 1987).
- [3] Yumiko Takamori, 'A Quality and Equipment Handling Cost Analysis for GTE California' (MS report, December 1987).
- [4] Jeffrey C. Switzer, 'An Analysis and Implementation of a Land Environment Spare Parts Scaling Model for the Canadian Forces', (MS thesis, May, 1988).
- [5] Mari B. Hecht, 'A Comparison of Bayesian and Classical Statistical Techniques Used to Identify Hazardous Traffic Intersections' (MS thesis, August, 1988).
- [6] Valerie L. Weber, 'Development and Test of a Method for Evaluating the Effectiveness of Modifications at Hazardous Locations Within a Traffic System', (MS report, May 1989).
- [7] Ronald Odio, 'Implementation and Evaluation of a Conditional Stochastic Decomposition Algorithm', (MS report, December 1990).
- [8] Grant Cameron, 'The Impact of Alternative Routing Algorithms on Link Sizing in DCS Switched Networks', (MS thesis, December 1993).
- [9] Matt Kehret, 'An Interactive Approach to Product Cost Estimation', (MS Report, May 1998).
- [10] Jenn Barzeele, 'Sampled Data in Stochastic Programs: A Dual Based Approach', (MS Thesis, August 2000).
- [11] Mary Elizabeth Hendricks, 'An Integrated Design for Six Sigma (DFSS) Approach to New Product Development Using Robust and Reliability Engineering Tools', (MEng Report, December 2001).
- [12] John Scott, 'Failure Modes Effects and Criticality Analysis for the ATAL Engineering Development Program' (MS Report, May 2002).
- [13] Elin Ronning, 'Workforce Planning for a Consulting Company' (MS Thesis, August 2002).

COURSES TAUGHT

SIE 305 Introduction to Engineering Probability and Statistics
SIE 321 Probabilistic Models in Operations Research
SIE 340 Deterministic Operations Research
SIE 422/522 Engineering Decision Making Under Uncertainty
SIE 440/540 Survey of Optimization Methods
SIE 500abc Introduction to SIE Methods
SIE 520 Stochastic Modeling
SIE 522 Decision Making Under Uncertainty
SIE 525 Queueing Theory
SIE 530 Engineering Statistics
SIE 540 Survey of Optimization
SIE 541 Dynamic Programming
SIE 640 Topics in Optimization
SIE 645 Large-Scale Optimization

Courses Designed and Developed for Web-Based Delivery

SIE 500a Introduction to SIE Methods: Probability and Statistics
SIE 500b Introduction to SIE Methods: Stochastic Processes
SIE 500c Introduction to SIE Methods: Linear Programming
SIE 530 Engineering Statistics