David A. Nembhard

Professor, Department of Engineering
Harvey Mudd College, Claremont CA

Professor and Director of Applied Science Programs
Claremont McKenna College, Claremont CA

EDUCATION

Ph.D., Industrial and Operations Engineering (1994) The University of Michigan, Ann Arbor, Michigan, Dissertation: "Heuristic Path Selection in Graphs with Non-Order Preserving Reward Structure," Committee: C. C. White III chair, S. M. Pollock, K. G. Murty, and M. R. Young.

M.S., Industrial and Operations Engineering (1993) The University of Michigan, Ann Arbor, Michigan, Thesis: "Non-Order Preserving Search with Imperfect Information," C. C. White III, chair

M.S.E., Systems Engineering (1990) Case Western Reserve University, Cleveland, Ohio, Thesis: "Route Selection for the Transportation of Hazardous Materials," Benjamin Hobbs, chair.

B.S., Systems and Control Engineering (1987) Option in Systems Engineering, Case Western Reserve University, Cleveland, Ohio

PRIOR APPOINTMENTS

Professor of Business Analytics & *Professor*, Industrial and Systems Engineering, University of Iowa, Iowa City, Iowa (2020-2023)

Professor, Mechanical Industrial, and Manufacturing Engineering.
Oregon State University, Corvallis, Oregon (2016-2020)

Graduate Programs Director, Industrial and Manufacturing Eng.
Pennsylvania State University, University Park, Pennsylvania (2014-2016)

Professeur Invité (Invited Professor), Laboratoire Génie Industriel (Industrial Engineering)
École Centrale Paris, Châtenay-Malabry, France (2006-2007)

Associate Professor, Industrial and Manufacturing Engineering
Pennsylvania State University, University Park, Pennsylvania (2004-2016)

Associate Professor, Industrial Engineering
University of Wisconsin-Madison, Madison, Wisconsin (2003-2004)

Assistant Professor, Industrial Engineering
University of Wisconsin-Madison, Madison, Wisconsin (1998-2003)

Assistant Professor, MBA and Operations Management Programs,
Auburn University, Auburn, Alabama (1994 - 1998)

Honors and Awards

The Bastian Award, Penn State University, "Decision Analysis Enhancement of Small Business Operations" 2005

Harold and Inge Marcus Career Professorship, The Pennsylvania State University, College of Engineering, 2004-2006

IEEE Engineering Management Society, 2000 Transactions Publication Award, "An Individual-Based Description of Learning Within an Organization," 2000

The Great Lakes Center for Truck and Transit Research Scholar Award, The Great Lakes Center for Truck and Transit Research, "Routing Vehicles Transporting Hazardous Materials," December 1994.

Great Lakes Center for Truck and Transit Research Scholar, 1993 - 1994.

Rackham Merit Fellowship, University of Michigan, 1991 - 1994.

National Achievement Scholarship, Case Western Reserve University, 1983 – 1987.

Professional Societies

Institute for Operations Research and the Management Sciences (INFORMS), Member

American Society for Quality (ASQ), Member

Institute of Industrial and Systems Engineers (IISE), Senior Member

Institute of Electrical and Electronics Engineers (IEEE), Technology and Engineering Management Society (TEMS) Member.

Refereed Journal Articles *(*graduate student mentee) h-index=29, i10=46, j-index =11*

1. **Nembhard, D. A.** and Young, M. R. "Parametric Empirical Bayes Estimates of Truck Accident Rates," *Journal of Transportation Engineering*, 121(4), 359-363, 1995. doi:10.1061/(ASCE)0733-947X(1995)121:4(359)

2. **Nembhard, D. A.** and White, III, C. C. "Applications of Non-Order Preserving Path Selection to HAZMAT Routing" *Transportation Science*, 31(3), 262-271, 1997. doi:10.1287/trsc.31.3.262

3. Uzumeri, M. V. and **Nembhard**, **D. A.** "A Population of Learners: A New Way to Measure Organizational Learning," *Journal of Operations Management*, 16(5), 515-528, 1998. doi:10.1016/S0272-6963(97)00017-X

4. **Nembhard, D. A.** and White, III, C. C. "A Heuristic Search Approach for Solving Multiobjective Non-Order Preserving Path Selection Problems," *IEEE Transactions on Systems Man and Cybernetics*, 29(5), 450-459, 1999. doi:10.1109/3468.784172

5. **Nembhard, D. A.** and Uzumeri, M. V. "An Individual-Based Description of Learning within an Organization," *IEEE Transactions on Engineering Management*, 47(3), 370-378, 2000.

doi:10.1109/17.865905

6. **Nembhard, D. A.**, and Uzumeri, M. V. "Experiential Learning and Forgetting for Manual and Cognitive Tasks," *International Journal of Industrial Ergonomics*, 25(4), 315-326, 2000. doi:10.1016/S0169-8141(99)00021-9

7. **Nembhard, D. A.** "The Effects of Task Complexity and Experience on Learning and Forgetting: A Field Study," *Human Factors*, 42(2), 272-286, 2000. doi: 10.1518/001872000779656516

8. **Nembhard, D. A.** and Nembhard, H. B. "A Demerits Control Chart for Autocorrelated Data," *Quality Engineering*, 13(2), 179-190, 2000. doi:10.1080/08982110108918640

9. Nembhard, H. B. and **Nembhard, D. A.** "The Use of Bayesian Forecasting to Make Process Adjustments During Transitions," *European Journal of Operational Research*, 130(2), 437-448, 2001. doi:10.1016/S0377-2217(00)00057-6

10. **Nembhard, D. A.** "Heuristic Approach for Assigning Workers to Tasks Based on Individual Learning Rates," *International Journal of Production Research*, 39(9), 1955-1968, 2001. doi:10.1080/00207540110036696

11. **Nembhard, D. A**, and Osothsilp*, N. "An Empirical Comparison of Forgetting Models," *IEEE Transactions on Engineering Management,* 48(3), 283-291, 2001. doi:10.1109/17.946527

12. Shafer, S. M., **Nembhard, D. A.**, and Uzumeri, M. V. "The Effects of Worker Learning, Forgetting, and Heterogeneity on Assembly Line Productivity" *Management Science*, 47(12), 1639-1653, 2001. doi:10.1287/mnsc.47.12.1639.10236

13. **Nembhard, D. A.** and Osothsilp*, N. **"**Task Complexity Effects on Between-Individual Learning/Forgetting Variability,**"** *International Journal of Industrial Ergonomics,* 29(5), 297-306, 2002. doi:10.1016/S0169-8141(01)00070-1

14. Ramirez*, Y. V. and **Nembhard, D. A**. "Measuring Knowledge Worker Productivity: A Taxonomy," *Journal of Intellectual Capital,* 5(4), 602-628, 2004. doi:10.1108/14691930410567040

15. **Nembhard, D. A**., and Osothsilp*, N. "Authors' Reply to "A Note on 'An Empirical Comparison of Forgetting Models'" *IEEE Transactions on Engineering Management*, 51(2), 235-235, 2004. doi:10.1109/TEM.2004.826348

16. Lin* J-H., Radwin, R. G. and **Nembhard, D. A.** "Ergonomics Applications of a Mechanical Model of the Human Operator in Power Hand Tool Operation," *Journal of Occupational and Environmental Hygiene*, 2, 111-119, 2005. doi**:**10.1080/15459620590913155

17. **Nembhard, D. A.,** and Osothsilp*, N. "Learning and Forgetting Based Worker Selection for Tasks of Varying Complexity," *Journal of the Operational Research Society*, 56(5), 576-587, 2005. doi:10.1057/palgrave.jors.2601842

18. **Nembhard, D. A.**, Nembhard, H. B., and Qin*, R. "A Real Options Model for Workforce Cross Training," *The Engineering Economist,* 50, 95-116, 2005. doi:10.1080/00137910590949850

19. **Nembhard, D. A.,** and Prichanont*, K. "Cross Training in Serial Production with Process Characteristics and Operational Factors," *IEEE Transactions on Engineering Management*, 54(3), 565-575, 2007. doi:10.1109/TEM.2007.900793

20. **Nembhard, D. A.,** and Shafer, S. M. "The Effects of Workforce Heterogeneity on Productivity in an Experiential Learning Environment*," International Journal of Production Research*, 46(14), 3909-3929, 2008. doi**:**10.1080/00207540600596981

21. **Nembhard, D. A.,** Yip*, K., and Shtub, A. "Comparing Competitive and Cooperative Strategies for Learning Project Management," *Journal of Engineering Education*, 98(2), 181-192, 2009. doi:10.1002/j.2168-9830.2009.tb01016.x

22. Schultz, K., Schoenherr, T., and **Nembhard**, **D. A.** "An Example and a Proposal Concerning the Correlation of Worker Processing Times in Parallel Tasks," *Management Science*, 56(1), 176-191, 2010. doi:10.1287/mnsc.1090.1080

23. Kim*, S., and **Nembhard, D. A.** "Cross-Trained Staffing Levels with Heterogeneous Learning/Forgetting," *IEEE transactions on Engineering Management*, 57(4), 560-574, 2010. doi:10.1109/TEM.2010.2048905

24. Qin*, R., and **Nembhard, D. A.** "Workforce Agility for Stochastically Diffused Conditions - A Real Options Approach," *International Journal of Production Economics*, 125, 324-334, 2010. doi:10.1016/j.ijpe.2010.01.006

25. **Nembhard, D. A.,** Yip*, K., Stifter, C. "Association Rule Mining in Developmental Psychology," *International Journal of Applied Industrial Engineering,* (1)1, 23-37, 2012. doi:10.4018/ijaie.2012010103

26. Qin*, R., and **Nembhard, D. A.,** "Demand Modeling of Stochastic Product Diffusion of the Life Cycle," *International Journal of Production Economics*, 137(2), 201-210, 2012. doi:10.1016/j.ijpe.2012.01.027

27. **Nembhard, D. A.,** and Bentefouet*, F. "Parallel System Scheduling with General Worker Learning and Forgetting," *International Journal of Production Economics*, 139 533-542, 2012. doi:10.1016/j.ijpe.2012.05.024

28. Kim*, S. and **Nembhard**, **D. A.** "Rule Mining for Scheduling Cross Training with a Heterogeneous Workforce," *International Journal of Production Research*, 51(8), 2281-2300, 2013. doi:10.1080/00207543.2012.716169

29. Bentefouet*, F., **Nembhard, D. A.** "Optimal Flow-Line Conditions with Worker Variability," *International Journal of Production Economics*, 141, 675-684, 2013. doi:10.1016/j.ijpe.2012.10.008

30. Chonde*, S., Ashour, O., **Nembhard, D. A.** Kremer G. E. O., "Model Comparison in emergency Severity Index Level Prediction," *Expert Systems with Applications*, 40(17), 6901-6909, 2013. doi:10.1016/j.eswa.2013.06.026

31. Xiao*, M., **Nembhard, D. A**., and Dai, C. J. "A Survey of Knowledge Work Productivity Metrics," *International Journal of Productivity Management and Assessment Technologies,* 1(2), 1-18, 2013. doi:10.4018/ijpmat.2012040101

32. **Nembhard, D. A.** "Cross Training Efficiency and Flexibility with Process Change," *International Journal of Operations and Production Management,* 34(11), 1417-1439, 2014. doi:10.1108/IJOPM-06-2012-0197

33. Macht*, G., **Nembhard, D. A**., J-H. Kim, and Rothrock, L. "Structural Models of Extraversion, Communication and Team Performance," *International Journal of Industrial Ergonomics*, 44, 82-91, 2014. doi:10.1016/j.ergon.2013.10.007

34. **Nembhard, D. A.,** Bentefouet*, F. "Selection Policies for a Multifunctional Workforce," *International Journal of Production Research*, 52(16), 4785-4802, 2014. doi:10.1080/00207543.2014.887231

35. **Nembhard, D. A**., and Bentefouet*, F. "Selection, Grouping, And Assignment Policies with Learning-By-Doing and Knowledge Transfer," *Computers and Industrial Engineering*, 79, 175-187, 2015. doi:10.1016/j.cie.2014.11.006

36. Xiao*, M. and **Nembhard, D. A**., "Utility-Based Knowledge Worker Productivity Assessment", *International Journal of Productivity Management and Assessment Technologies*, 2(2), 28-46 April-June, 2014. doi:10.4018/ijpmat.2014040103

37. Yip*, K. and **Nembhard, D. A.** "Mining Approximate Sequential Patterns with Gaps," *International Journal of Data Mining, Modeling and Management*, 7(2), 108-129, 2015. doi: 10.1504/IJDMMM.2015.069249

38. Qin*, R., **Nembhard, D. A.** and W. L. Barnes. "Workforce Flexibility in Operations Management," *Surveys in Operations Research and Management Science*, 20(1) 19-22, 2015. doi:10.1016/j.sorms.2015.04.001

39. Macht*, G. and **Nembhard, D. A.** "Measures and Models of Personality and their Effects on Communication and Team Performance," *International Journal of Industrial Ergonomics*, 49, 78-89, 2015. doi:10.1016/j.ergon.2015.05.006

40. Qin*, R. and **Nembhard, D. A.** "Workforce Agility in Operations Management," *Surveys in Operations Research and Management Science*, 20, 55-69, 2015. dx.doi.org/10.1016/j.sorms.2015.11.001

41. **Nembhard, D. A.** and J. Olivella, "Calibrating Cross-Training to Meet Demand Mix Variation and Employee Absence," *European Journal of Operational Research*, 248(2), 462-472, 2016. doi:10.1016/j.ejor.2015.07.036

42. Kim*, J-E., **Nembhard**, **D. A.,** and J-H Kim, "The Effects of Task Complexity and Group Size on Deadline Reactivity," *Int. J. Industrial Ergonomics*, 56, 106-114, 2016. dx.doi.org/10.1016/j.ergon.2016.09.011

43. **Nembhard, D. A.,** and Xiao*, M. "The Relation of Knowledge Intensity to Productivity Assessment Preferences and Cultural Differences," *International Journal of Productivity Management and Assessment Technologies*, 5(1) 1-19, 2017. dx.doi.org/10.4018/IJPMAT.2017010101

44. Olivella, J. and **Nembhard, D. A**., "Cross Training Policies for Team Cost and Robustness," *Computers and Industrial Engineering*, 111, 79-88, 2017. doi.org/10.1016/j.cie.2017.07.006

45. Kim*, J-E., and **Nembhard, D. A.,** "Parametric Empirical Bayes Estimation of Individual Time-Pressure Reactivity," *International Journal of Production Research,* 56(7). 2452-2463, 2018. doi.org/10.1080/00207543.2017.1380321

46. **Nembhard, D. A.**, Sun*, Y. "A Symbolic Genetic Programming Approach for Identifying Models of Learning-by-Doing," *Computers and Industrial Engineering*, 131, 524-533, 2019. doi.org/10.1016/j.cie.2018.08.020

47. Mendez-Vazquez*, Y. and **Nembhard, D. A.,** "Worker Grouping-Assignment: Task Heterogeneity, System Dimensionality, And Knowledge Transfer" *Computers and Industrial Engineering*, 127, 1101-1114, 2019. doi.org/10.1016/j.cie.2018.11.050

48. Kim*, J-E., and **Nembhard, D. A.,** "Eye Movement as a Mediator of the Relationships Among Time Pressure, Feedback, And Learning Performance," *Int. J. Industrial Ergonomics,* 70 116-123, 2019. doi.org/10.1016/j.ergon.2018.12.006

49. Kim*, J-E., and **Nembhard, D. A.,** "The Impact of Procrastination on Engineering Students' Academic Performance," *Int. J. of Engineering Education*, 35(4), 1-10, 2019.

50. Macht*, G. **Nembhard, D. A.**, And Leicht, R.M. "Operationalizing Emotional Intelligence for Team Performance," *Int. J. Industrial Ergonomics*, 71 57-63, 2019. doi.org/10.1016/j.ergon.2019.02.007

51. Sun*, Y., & **Nembhard, D. A**." Modeling online learning performance with biometrics: Current study and future directions," *Oregon State University Ecampus Research,* 2022

52. Sun*, Y., **Nembhard, D. A.**, "Information Representations and the Mediating Role of Emotions on E-learning Outcomes," *International Journal of Human-Computer Interaction*, 2022, 1-12. *doi.org/10.1080/10447318.2022.2096187*

53. Dalilian*, F. Nembhard, D.A., "Biometrically Measured Affect for Screen-Based Drone Pilot Skill Acquisition" *International Journal of Human-Computer Interaction,* 2023. /doi.org/10.1080/10447318.2023.2208991

54. Bektur*, G, **Nembhard, D. A.**, "Multi- Objective Variable Neighborhood Search Based Algorithm for Multi- Period Home Health Care Assignment, Scheduling and Routing Problem with Team Formation" *International Journal of Industrial Engineering: Theory, Applications and Practice*. 2023. https://doi.org/10.23055/Ijietap.2023.30.5.8737

55. Sun*, Y., **Nembhard, D. A.**, "Instructional Design for Learning Performance and the Mediating Effects of Cognitive Load," *working paper* 2023. http://dx.doi.org/10.2139/ssrn.4399436

56. Sun*, Y., **Nembhard, D. A.**, "Knowledge Representation Learning with EEG-Based Engagement and Cognitive Load as Mediators of Performance," *International Journal of Human-Computer Interaction,* under revision, 11.7.2023.

Book

1. Workforce Cross Training, **Nembhard, D. A.** (editor), CRC-Taylor & Francis, 2007. ISBN:0-8493-3632-5

Book Chapters

1. **Nembhard, D. A.** "Mining Human Performance Data," in *Handbook of Data Mining*, Nong, Ye, editor, Lawrence Erlbaum Associates, pp. 463-479, 2003.

2. **Nembhard, D. A.** "Cross Training in Production Systems with Human Learning and Forgetting, in *Handbook of Industrial and Systems Engineering*, A. Badiru, Editor, CRC Press, pp. 1-13, 2006.

3. Rothrock, L., and **Nembhard, D. A**., "Team-In-The-Loop Simulations: Advances In The Study Of Collaboration And Conflict," in *International Encyclopedia of Ergonomics and Human Factors*, 2nd Edition, W. Karwowski, editor, CRC Taylor & Francis, pp. 2400-2407, 2006.

4. **Nembhard, D. A.** and Prichanont*, K. "Factors Affecting Cross-Training Performance in Serial Production Systems," in *Workforce Cross Training*, D. A. Nembhard, Editor, CRC Taylor & Francis, pp. 87-110, 2007.

5. **Nembhard, D. A.** and Norman, B. A. "Cross Training in Production Systems with Human Learning and Forgetting," in *Workforce Cross Training*, D. A. Nembhard, editor, CRC Taylor & Francis, pp.111-130, 2007.

6. Qin*, R. and **Nembhard, D. A.** "Valuing Workforce Cross Training Flexibility," in *Workforce Cross Training*, D. A. Nembhard, ed., CRC Taylor & Francis, pp.131-152, 2007.

7. **Nembhard, D. A.,** Nembhard, H.B. and Qin, R. "A Real Options Model for Workforce Cross Training," in *Real Options Models*, H. B. Nembhard, ed., CRC Taylor & Francis, pp.151-168, 2009.

8. **Nembhard, D. A.** "Cross Training in Production Systems with Human Learning and Forgetting, in *Handbook of Industrial and Systems Engineering, second edition*, A. Badiru, Editor, CRC Press, 2013.

9. Kim, J-H, G.A. Macht, L. Rothrock, and **Nembhard, D. A**. "Developing Metacognitive Models for Team-Based Dynamic Environment Using Fuzzy Cognitive Mapping," in Engineering Psychology and Cognitive Ergonomics, Understanding Human Cognition Lecture Notes in Computer Science, V. 8019, pp. 325-334, 2013.

10. **Nembhard, D. A**., Yip, K. K., & Stifter, C. A. "Association rule mining in developmental psychology." In *Data Mining: Concepts, Methodologies, Tools, and Applications* IGI Global. Chapter 90, (pp. 1737-1751), 2013.

Articles published in refereed proceedings

1. **Nembhard, D. A.** "Heuristic Path Selection in OR-Graphs with Application to HAZMAT Routing," *Proceedings of the IEEE International Conference on Systems, Man and Cybernetics*, San Antonio, TX. 1536-1540, 1994.

2. **Nembhard, D. A**. and H. B. Nembhard, "Dynamic Simulation for Time Series Modeling," *Proceedings of the 1996 Winter Simulation Conference*, San Diego, eds. J. M. Charnes, D. M. Morrice, D. T. Brunner, and J. J. Swain, pp. 1407-1412, 1996.

3. Qin*, R., and **Nembhard, D.A**. "Cross Training for Efficient and Flexible Service System Portfolios," *2005 International Conference on Service Systems and Services Management* (IEEE Systems, Man and Cybernetics Society), Chongqing, China, pp.955-960, 2005.

4. Yan, J. and **Nembhard, D.A**., "Association Rules Discovery in Workforce Schedule Database. Proceedings of the 2006 International Conference on Machine Learning; Models, Technologies & Applications, MLMTA 2006, Las Vegas, Nevada, USA, June 26-29, 2006.

5. Yip*, K. K., and **Nembhard, D. A.,** "Combined AND/OR Association Rules," 2008 International Conference on Data Mining, Las Vegas, Nevada, USA, pp.1-5, 2008.

6. Yip*, K. K., and **Nembhard, D. A.,** "MWASP- Multiple Width Approximate Sequential Patterns," 2009 International Conference on Data Mining, Las Vegas, Nevada, USA, pp.1-6, 2009.

7. **Nembhard, D.A**., J. Olivella, "Determining work team cross-training goals to cope with a certain level of production mix variation and employee absences." EURO XXIV, Lisbon 2010.

8. Macht*, G.A., Leicht, R. M, and **Nembhard, D.A**., "Emotional Intelligence Subcategories Predict Team Performance in an Engineering Curriculum, Engineering Project Organization Conference, 2012.

9. Kim, J-H., Macht*, G.A., Rothrock, L. and **Nembhard, D. A.** "Developing Metacognitive Models for Team-based Dynamic Environment Using Fuzzy Cognitive Mapping, HCI 2013.

10. Lum, H. C., R. L. Greatbatch*, G. E. Waldfogle, **D. A. Nembhard**, "The Relationship of Eye Movement, Workload, and Attention on Learning in a Computer-Based Training Program," Proceedings of the Human Factors and Ergonomics Society Annual Meeting September 2016, 60(1), 1477-1481. https://doi.org/10.1177/1541931213601339

11. Mendez-Vazquez*, Y. M., and **Nembhard, D. A.** "Worker Grouping and Assignment for Serial and Parallel Manufacturing Systems Considering Workers' Heterogeneity and Task Complexity" Proceedings of the 2017 Winter Simulation Conference, W.K.V. Chan, A. D'ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page, Eds., 4348-4359

12. Lopez*, B, Christian, and **Nembhard, D.A.** "Cooperative Workforce Planning Heuristic with Worker Learning and Forgetting and Demand Constraints," *Proceedings of the 2017 Industrial and Systems Engineering Conference. 2017.*

13. Mendez-Vazquez*, Y. M., and **Nembhard, D. A.** Simulation-Aided Assessment of Team Performance: The Effects of Transient Underachievement and Knowledge Transfer, *Proceedings of the 2020 Winter Simulation Conference.*

* student co-authors under supervision

Papers refereed by abstract

1. Nembhard, H. B., **Nembhard, D. A.**, and Gurses, A. "Real Options Modeling for Valuing Worker Flexibility," *Proceedings of the 2002 Industrial Engineering Research Conference,* pp.1-7, 2002.

2. Chonde*, S., **Nembhard, D.A.,** Kremer, G.E.O, and Ashour, O. "Neural Networks, Bayesian Networks, and Logistic Regression for ESI Prediction," ISERC Conference Proceedings, San Juan, 2013.

3. Macht*, G., Kremer, G.E.O, and **Nembhard, D.A**. "Alternative Methodology for TRIZ Implementation," ISERC Conference Proceedings, San Juan, 2013.

4. Macht*, G., Leicht, R.M., and **Nembhard, D.A.** "Emotional Intelligence, Communication and Team Performance," ISERC Conference Proceedings, San Juan, 2013.

5. Kim, J-E. and **Nembhard, D.A**. "Modeling academic performance and procrastination: A structural equation approach," *Proceedings of the 2017 Industrial and Systems Engineering Conference, Pittsburgh, 2017.*

Research reports to sponsors

1. Uzumeri, M. V., **Nembhard, D. A.,** Byrd, T., and Oswald, S. "Baseline Study for IDS Project: April-September 1996", Report to BDM Engineering Services Company, 125 pages 1996.

2. Uzumeri M.V. and **Nembhard, D. A.,** "Learning and Forgetting on Radio Inspection Lines," Report to Chrysler Electronics, Huntsville, Alabama, 52 pages. 1997.

3. **Nembhard, D. A.,** "On-Line Analog Data Mining Tools for Manufacturing Processes," Report to Sun Microsystems, California, 1999.

4. **Nembhard, D. A.,** "Worker Allocation Decisions in Organizations Based on Individual Learning and Forgetting, Report to National Science Foundation - Decision Risk, and Management Science Program, 2001.

5. **Nembhard, D. A.**, "Operator Alertness for Human-Machine System Performance," Report to Space and Naval Warfare Systems Command (SPAWAR) of the Department of Defense, 29 pages, 2000.

6. **Nembhard, D. A.**, "Worker Cross Training and Assignment Considering Learning and Forgetting Effects," Report to the National Science Foundation- Decision, Risk and Management Science Program, 10 pages, 2005.

7. Rovine, M., **Nembhard, D. A**., Loken, E., and Stifter, C. "Dynamics of Human Behavior, DHB: Multilevel ARMA and Dynamic Models for Longitudinal Data and the Study of Human Interactions," Report to the National Science Foundation, DMI program, 15 pages, 2010.

Papers presented at technical and professional meetings
(Presenter listed first, * indicates student under supervision)

1. **Nembhard, D. A.** "Optimal Multi-Destination HAZMAT Routing Under Risk Aversion," Invited Session on Markov Decision Processes, ORSA/TIMS Phoenix Joint National Meeting, November 1993.

2. **Nembhard, D. A.** "Generalized Heuristic Search in OR-Graphs Requiring Arc-Cost Determination with HAZMAT Routing Application," Contributed Session, ORSA/TIMS Detroit Joint National Meeting, October 1994.

3. **Nembhard, D. A.** "Routing Vehicles Transporting Hazardous Materials," *The Great Lakes Center for Truck and Transit Research Scholar Seminar*, December 1994.

4. **Nembhard, D. A.** "A Bayesian Approach to Controlling Dynamic Systems," Contributed Session, INFORMS, New Orleans, November 1995.

5. **Nembhard, D. A.** "Applications of Learning Curve Analysis to Agile Manufacturing," sponsored session, INFORMS, San Diego, CA, May 1997.

6. **Nembhard, D. A.** "Effects of Learning and Forgetting in Production Processes," QSR sponsored session, INFORMS, Cincinnati, May 1999.

7. **Nembhard, D. A.,** Mehrotra*, V., Osothsilp*, N., and Sharma*, V. "Worker Learning and Forgetting in Manufacturing Industries," Center for Human Performance in Complex Systems 1999 Workshop, Poster Session, University of Wisconsin-Madison, 1999.

8. **Nembhard, D. A.,** and Nembhard, H. B. "A Demerits Control Chart for Autocorrelated Data," QSR sponsored session, INFORMS, Philadelphia, November 1999.

9. Yeh*, V., and **Nembhard, D. A.** "Productivity and Quality of Working Life: Human Factor Associated System Variation," Contributed Session, INFORMS, Philadelphia, November 1999.

10. **Nembhard, D. A.** "An Empirical Comparative Study of Models for Measuring Intermittent Forgetting," INFORMS National Meeting, Salt Lake City, March 2000.

11. **Nembhard, D. A.** "A Heuristic Approach for Assigning Workers to Tasks Based on Individual Learning and Forgetting Rates," INFORMS-KORMS International Meeting, Seoul, Korea, June 2000.

12. **Nembhard, D. A.** "Worker Assignment in an Environment of Change," INFORMS National Meeting, MSOM sponsored session, San Antonio, November 2000.

13. **Nembhard, D. A.,** and Leopairote*, K. "The Impact of Worker Heterogeneity on Assembly Line Productivity with Empirical Learning and Forgetting," INFORMS National Meeting, San Antonio, November 2000.

14. **Nembhard, D. A.,** and Norman, B. A. "Workforce Scheduling Considering Learning and Forgetting Effects" Invited Session on Scheduling Theory and Applications, INFORMS National Meeting, Miami, November 2001.

15. Leopairote*, K., and **Nembhard**, **D. A.** "Worker Assignment with Individual Learning and Forgetting Effects in a Cellular Manufacturing System," Invited Session on Operations Management, INFORMS National Meeting, Miami, November 2001.

16. Osothsilp*, N., and **Nembhard**, **D. A.** "Worker-Task Assignment with Learning, Forgetting and Task Heterogeneity," Invited Session on Operations Management, INFORMS National Meeting, Miami, November 2001.

17. **Nembhard, D. A.,** "The Future of Learning Curve Research," Invited Panel, Production and Operations Management Society, San Francisco, California, April 2002.

18. **Nembhard, D. A.,** and Norman, B. A. "Worker-Task Assignment in Cellular Manufacturing with Individual Learning and Forgetting" IE Research Conference, Orlando, May 2002.

19. **Nembhard, D. A.,** and Norman, B. A. "Workforce Training and Development Considering Learning and Forgetting Effects," Invited Session on Manufacturing Systems, INFORMS National Meeting, San Jose, California, November 2002.

20. Norman, B. A., and **Nembhard**, **D. A.** "Workforce Deployment in Manufacturing Cells Considering Worker Skills and Learning and Forgetting Effects," Invited Session on Manufacturing Systems, INFORMS National Meeting, San Jose, California, November 2002.

21. **Nembhard, D. A.** "Worker Productivity with Individual Differences," Invited Seminar, Purdue University, Department of Industrial Engineering, July 2003.

22. Leopairote*, K. and **Nembhard, D. A.** "An Investigation of Worker Heterogeneity and Group Composition in Serial Production Systems," Invited Session, INFORMS National Meeting, Atlanta, Georgia, October, 2003.

23. **Nembhard, D. A.,** and Norman, B. A. "Cross Training and Worker Efficiency," Invited Session, INFORMS National Meeting, Atlanta, Georgia, October, 2003.

24. **Nembhard, D. A.** "System Performance and Cross training with Individual Differences," Invited seminar, Penn State University, Department of Industrial and Manufacturing Engineering, October 2003.

25. **Nembhard, D. A**. "Mining Human Productivity Data," Invited Conference, Mathematical Methods for Learning Workshop, Como, Italy, Sponsored by the NSF-DMII program, June 2004.

26. Thomas*, B. G., and **Nembhard, D. A**. "Preference Based Search Approach for Scheduling Workers with Learning and Forgetting," MSOM sponsored session, INFORMS National Meeting, Denver, October 2004.

27. **Nembhard, D. A.,** and Yan*, J. "Worker Multi-functionality with Process and Operational Factors," MSOM sponsored session, INFORMS National Meeting, Denver, October 2004.

28. **Nembhard, D.A.** "Workforce Engineering for Improving Production Operations," INSEAD, Fontainebleau, France, October, 2005.

29. Norman, B. A., **Nembhard, D. A.**, and Vidic, N. "Bucket brigades when productivity is changing," Invited Session, INFORMS, San Francisco, November 2005.

30. **Nembhard, D. A**., and Qin, R. "Mitigating Short Product Life Cycle Issues with Workforce Flexibility," Invited Session, INFORMS, San Francisco, November 2005.

31. Kim*, S., and **Nembhard, D. A.** "Workforce Cross-Training Decision with Minimizing Number of Workers Under Various Factors in Parallel Systems" INFORMS, Pittsburgh, November 2006.

32. Yan*, J., and **Nembhard, D.A.** "Discovering Assignment Rules in Workforce Schedules Using Data Mining," The 2006 International Conference on Data Mining (DMIN06), Las Vegas, June 26-29, 2006.

33. Yan*, J., and **Nembhard, D.A**. "Association Rules Discovery in Workforce Schedule Database," The 2006 International Conference on Machine Learning; Models, Technologies & Applications (MLMTA'06), Las Vegas, June 2006

34. **Nembhard, D.A.** "Workforce Engineering and The Learning Effect," INFORMS, Seattle, November 2007.

35. Kim*, S., and **Nembhard, D. A.** "Workforce Cross-training Decision with Minimizing the Number of Workers" INFORMS, Seattle, November 2007.

36. Kim*, S., and **Nembhard, D. A.** "Minimizing Cross Trained Staffing Levels in Parallel systems with Heterogeneous Learning/Forgetting," INFORMS Washington DC, October 2008.

37. Medina*, L., and **Nembhard, D. A**. "Workforce Implications in Warehouses and Distribution Centers," INFORMS, San Diego, October 2009.

38. **Nembhard, D. A.** "Human Factors in Operations Research," Human Factors and Ergonomics Society-National Ergonomics Month Lecture Series, October 15, 2009.

39. **Nembhard, D. A.** "Integrating Human Factors and Operations Research," Operations Research Colloquium, Penn State University, April, 2011.

40. Macht*, G., and **Nembhard D. A.** "Develop a Team Selection Protocol from a human in the loop simulation, "INFORMS Charlotte, November 2011.

41. Bentefouet*, F. and **Nembhard, D. A**. "Optimal Worker Task Schedule with Independent Jobs and Independent Stations, and Learning," INFORMS Charlotte, November 2011.

42. **Nembhard, D. A.** and Qin*, R. "Acquisition and Valuation of Workforce Agility for Stochastically Diffused Conditions," INFORMS Charlotte, November 2011.

43. **Nembhard, D. A.,** and Macht*, G. "Development of a Human Based Metric Selection Protocol" INFORMS Phoenix, 2012.

44. Olivella, J. and **Nembhard, D. A**. "Cross Training of Team Members to Deal with Demand Mix Variation and Absenteeism" INFORMS Phoenix, 2012.

45. **Nembhard, D. A.,** and Doerr, K. H. "Deadline reactivity and work Performance with Work-sharing," INFORMS Minneapolis, 2013.

46. **Nembhard, D.A.** and Doerr, K. H., "Modeling and Measuring Deadline Rush Effects," INFORMS San Francisco, November 2014

47. *Nembhard, D.A. and Kim, J-E, "Deadline reactivity modeling for human performance," INORMS, November 2015.*

48. Lum, H. C., R. L. Greatbatch, G. E. Waldfogle, **D. A. Nembhard**, "The Relationship of Eye Movement, Workload, and Attention on Learning in a Computer-Based Training Program," Human Factors and Ergonomics Society Annual Meeting September 2016.

49. Kim, J-E. and **Nembhard, D.A**. "Modeling academic performance and procrastination: A structural equation approach," *2017 Industrial and Systems Engineering Conference, Pittsburgh, 2017*.

50. Lopez, C.E. and **Nembhard, D.A.,** Cooperative Workforce Planning Heuristic with Worker Learning and Forgetting, and Demand Constraints," *2017 Industrial and Systems Engineering Conference, Pittsburgh, 2017*.

51. Bektur, G. and **Nembhard, D.A.,** "Home Health Care Assignment, Scheduling and Routing Problems: An Application for a State Hospital" *20th annual International Logistics and Supply Chain Conference,* October 21, 2022.

Participation in seminars and workshops

1. "The Transportation of Hazardous Materials" Auburn University, Management Department, August 1994. (Invited Speaker).

2. "Learning and Forgetting for manual and cognitive Tasks," The University of Wisconsin-Madison, Industrial Engineering Department, March 1998. (Invited Speaker).

3. Wisconsin IDEA Seminar, University of Wisconsin-Madison, May 6-10, 1999, (Invited Participant)

4. NSF Workshop on Engineering the Service Sector, Atlanta, GA., 2002, NSF, (Invited Participant)

5. "Workforce Engineering: A re-emergent field, Purdue University, Industrial Engineering Department, August 2003. (Invited Speaker)

6. "Workforce Cross Training in Manufacturing Systems," Penn State University, Industrial and Manufacturing Engineering Department, October 2003. (Invited Speaker)

7. "Workforce Engineering for Improving Production Operations," INSEAD, Fontainebleau, France, October, 2005. (Invited Speaker)

8. "Competitive and Cooperative Strategies for Learning Project Management, PSU/Technion Exchange Partnership, June 2007. (Invited Speaker), Haifa Israel.

9. "Human Factors in Operations Research," Human Factors and Ergonomics Society-National Ergonomics Month Lecture Series, October 15, 2009. (Invited Speaker)

10. Center for Integrated Healthcare Delivery Systems Workshop, 2009, (Invited Participant.)

11. "Human Factors in Operations Research," Human Factors and Ergonomics Society-National Ergonomics Month Lecture Series, October 15, 2009. (Invited speaker)

12. Center for Integrated Healthcare Delivery Systems Workshop, 2010, (Invited Participant.)

13. "Integrating Human Factors and Operations Research," Operations Research Colloquium, Penn State University, April 2011. (Invited Speaker)

14. "Deadline Reactivity and Work Performance" North Carolina State University, Industrial and Systems Engineering Dept. Invited Seminar, November 2013. (Invited Speaker)

15. "Cross Training and Team Performance: Personality, Communication, and Deadlines" The University of Michigan, Industrial and Operations Engineering Dept. Invited Seminar, March 2014. (Invited Speaker)

16. "Work Climate in Organizations Workshop" Penn State University, " NSF sponsored, (Science of Organizations Division; PI Alicia Grandey, Psychology), 2016, (Invited participant)

17. "Optimizing our Philanthropic Opportunity, Faculty and Administrative Leaders," Workshop, September 2016. (Invited Participant).

18. "Personalized Learning and Cross Training," Oregon State University, MIME Invited Seminar, May 2016. (Invited Speaker)

19. "Human Analytics, Behavioral Operations and Workforce Engineering," Human Centered Design Seminar, January 20, 2017, Oregon State University (Invited Speaker).

Funded Research Projects

1. Capital Vial, "Extrusion Quality Measurement and Control," **D. A. Nembhard (PI)**, $18,000, Jan 1997 - April 1998.

2. The University of Wisconsin-Madison, Graduate School Research Committee Grant, "Identifying System Variation in Multivariate Data," **D. A. Nembhard (PI)**, $14,600, July 1999 – June 2000.

3. Chrysler Electronics, "Worker Learning and Forgetting on Radio Inspection Lines," (**D. A. Nembhard (co-PI)**, with M.V. Uzumeri, PI), $45,000, May 1996 - April 1997.

4. Sun Microsystems, Academic Grant, "On-Line Analog Data Mining in Manufacturing," **D. A. Nembhard (PI)**, $26,480, 1999.

5. The University of Wisconsin-Madison, Graduate School Research Committee Grant, "Worker Allocation Decisions in Organizations Based on Individual Learning and Forgetting," **D. A. Nembhard (PI)**, $21,000, July 2000-June 2001.

6. The National Science Foundation (NSF), Decision Risk and Management Science (DRMS) Program, "Worker Allocation Decisions in Organizations Based on Individual Learning and Forgetting," unsolicited, **D. A. Nembhard (PI)**, $109,000, SES-9986385, February 2000 - January 2001.

7. Space and Naval Warfare Systems Command (SPAWAR) of the Department of Defense (DOD), "Analysis of Operator Alertness for Human-Machine System Performance," solicited, **D. A. Nembhard (PI)**, $31,000, March 2000 - July 2000.

8. The University of Wisconsin-Madison, Graduate School Research Committee Grant, "An Individual-Based Measurement Approach for Improvement of Health Care Outcomes," **D. A. Nembhard (PI)**, $23,766, July 2001-June 2002.

9. Ericsson Canada, "Team Composition and Learning for Software Design Engineers," **D. A. Nembhard (PI)**, $32,000, 2003-2004.

10. The University of Wisconsin-Madison, Graduate School Research Committee Grant, "Worker Cross Training and Assignment Considering Learning and Forgetting Effects," **D. A. Nembhard (PI)**, $16,350, July 2002-June 2003.

11. The National Science Foundation (NSF), SES-Decision, Risk and Management Science (DRMS) DMII- Manufacturing Enterprise Systems (MES), and SES-Innovation and Organizational Change (IOC) Programs, "Worker Cross Training and Assignment Considering Learning and Forgetting Effects," unsolicited, **D. A. Nembhard (PI)**, B. Norman (co-PI), $350,000, SES-0217666, August 2002 – December 2003.

12. The National Science Foundation (NSF), SES-Decision, Risk and Management Science (DRMS) Programs, "Cross Training, Assignment and Scheduling with Learning and Forgetting Effects," **D. A. Nembhard (PI)**, B. Norman (co-PI), $179,000, SES-0435948, January 2004 – July 2005.

13. The National Science Foundation (NSF), SES - Decision, Risk and Management Science (DRMS) Program, REU: Collaborative Research: Worker Cross Training and Assignment Considering Learning and Forgetting Effects," unsolicited, **D. A. Nembhard (PI)**, $11,750, August 2002 – July 2005.

14. The Pennsylvania State University, Department of Industrial and Manufacturing Eng., PSU/Technion Exchange Program and Partnership, "Project Management Learning Based Simulation," **D. A. Nembhard** and A. Shtub, $7,500, February 1, 2005 – January 31, 2006.

15. The National Science Foundation (NSF), Dynamics of Human Behavior, DHB: Multilevel ARMA and Dynamic Models for Longitudinal Data and the Study of Human Interactions," M. Rovine (PI), **D. A. Nembhard (co-PI)**, E. Loken (co-PI), C. Stifter (co-PI), $749,441, DMI-0527449 Feb 2006 - Jan 2010.

16. The Pennsylvania State University, Center for Service Enterprise Engineering, Research Award, "A Newsvendor Approach for Workforce Planning Decision Support during the PLC," **D. A. Nembhard (PI)**, $80,000, September 2007- November, 2007.

17. The Pennsylvania State University, Department of Industrial and Manufacturing Eng., PSU/Technion Exchange Program and Partnership, "Technology for Training Experts", **D. A. Nembhard** and A. Shtub, $7,500, February 1, 2008 – January 31, 2009.

18. The Pennsylvania State University, Department of Industrial and Manufacturing Eng., PSU/Technion Exchange and Partnership, "The Learning of Strategic Decision Making," **D. A. Nembhard** and A. Shtub, $3,000, February, 2011- January, 2012.

19. The National Science Foundation (NSF), "Recursive Estimation of Time-Varying Parameters in Dynamic Factor Models for Nonstationary Psychological Time Series," P. Molenaar (PI), **D. A. Nembhard (co-PI)**, E. Loken (Investigator), M. Rovine (Investigator), $250,000, SES-0852147 Aug 2009 - July 2012.

20. The Pennsylvania State University, College of Engineering Multi-Campus REU, "Team Cognition and Information," **D. A. Nembhard**, $1,500, May 2015- August 2015.

21. The Leonhard Center, Penn State University, "Engineering Project Management in A Flipped Classroom," **D. A. Nembhard (PI),** C. Tucker, (co-PI), $45,056, September 2015-August 2017. This project is to develop a course and research protocols for measuring and analyzing the efficacy of a flipped classroom model.

21. Women's Giving Circle, Oregon State University Foundation "MIME 101/ SHOP 101" $9600, Nordica MacCarty (PI), **D.A. Nembhard (co-PI),** and Nancy Squires (co-PI), 2018-2019

22. Oregon State University, Scaled Learning Innovation Grant, "Technology and Creativity for Enhancing COE Orientation Courses," **D.A. Nembhard (PI),** Nordica McCarty, Jennifer Parham-Mocello, $91,580.

23. E-Campus Fellowship, "Investigating the effect of adaptive online learning systems on learning performance with Electroencephalography (EEG) and Eye-tracking." $20,000, **D.A. Nembhard (PI)**

24. The National Science Foundation (NSF), FW-HTF-RM: Collaborative Research: Assistive Intelligence for Cooperative Robot and Inspector Survey of Infrastructure Systems (AI-CRISIS) **D. A. Nembhard (PI)**, $345,000, ECCS-2128561, Sept. 2020 - Aug. 2024.

Dissemination of Research in Non-Technical Media

1. "'Work memory' affects scheduling success," IIE Solutions, December 2001.

2. "Workplace Cross Training," Interview on Wisconsin Public Radio, November 12-14, 2001.

3. "Employee 'work memory' affects rotation scheduling," Wisconsin Week, Nov. 7, 2001.

4. "Jacks of all Trades" Chicago Tribune, March 21, 2006.

5. "Companies Want Jacks of All Trades," Baltimore Sun, March 27, 2006.

6. "Making sure employees work hard: The most common measures of productivity used today can end up hurting your business. These 6 metrics are guaranteed to work," Business 2.0, November 1, 2006.

Teaching Activities

ENGR 5270 **Truth in Big Data and Social-Media** (Iowa) – Critical thinking and tools/ techniques for identifying faulty arguments and misinformation.

ISE 6650 **Behavioral Operations** (Iowa) - Current research methods and results for strategic and operational control of systems involving human work.

BAIS 6230 **People Analytics** (Iowa) - A decision making & business analytics approach to exploiting big data, and biometric data related to human performance in complex systems.

IE599: **Industrial Engineering Data Analytics** (Oregon State)–modeling data in order to arrive at meaningful relations, patterns, trends, rules and conclusions. Pattern recognition, statistical, and mathematical techniques. Application areas include Individual performance measures, Quality forecasting, Quality measurement, and Fraud detection. Students will examine data and construct models using various software packages (R, Matlab)

IE533: **Human Analytics & Behavioral Operations** (Oregon State)- Current research methods and results for strategic and operational control of systems involving human work. *MIME, Oregon State*

IE454: **Analytical Decision Making** (Oregon State) –An introductory course in decision analysis, decision trees, and Bayesian models. *Department of Industrial and Manufacturing Engineering, Penn State.*

IE533: **Workforce Engineering** (Penn State)– Current research methods and results for strategic and operational control of systems involving human work. *Department of Industrial and Manufacturing Engineering*

IE597: **Production Systems Data Mining** (Penn State)- Multivariate methods for exploratory data analysis and data mining of industrial data types. *Department of Industrial and Manufacturing Engineering,*

IE516: **Introduction to Decision Analysis** (Penn State) - Overview of modeling techniques and methods used in decision analysis, including multi-attribute utility models, decision trees, and Bayesian models. Psychological components of decision-making are discussed. Elicitation techniques for model building are emphasized. Practical applications through real world model building are described and conducted. *Department of Industrial Engineering, UW-Madison*

IE691: **Human Productivity Improvement** (UW-Madison) – Recent developments and best practices in human learning, forgetting and team productivity in manufacturing. *Department of Industrial Engineering*

IE816: **Data Modeling and Online Analysis** (UW-Madison) – Advanced statistical tools for modeling manufacturing data with emphasis on informing the decision-making processes. Real time data analytical issues are discussed in the context of online analytical processing (OLAP). *Department of Industrial Engineering, UW-Madison*

ECPx **Project Management** – An introduction to concepts and methods for designing schedules and resource allocations for multi-period industrial projects. *Laboratoire Genie Industriale, Ecole Centrale – Paris, France.*

ECPy **Dynamic Programming** – A survey of dynamic programing problems, formulations, and solution methods. *Laboratoire Genie Industriale, Ecole Centrale – Paris, France.*

17 Continuing Courses Taught

BAIS 6230 **People Analytics**, University of Iowa

BAIS 9110 **Advanced Analytics**, University of Iowa

BAIS 9100 **Data and Decisions**, University of Iowa

ISE 2500: **Engineering Economy**, University of Iowa

MIME497/498: **Capstone Design**, Oregon State University.

MIME101: **Introduction to MIME**, An orientation to Mechanical, Industrial, and Manufacturing Engineering programs as Oregon State University.

IE426: **Stochastic Application in Industrial Engineering –** An overview of decision-making problems involving stochasticity. Oregon State University.

IE471/IE571: **Engineering Project Management –** An introduction to PM concepts, and best practices, focusing on engineering applications. Oregon State University.

IE322: **Probabilistic Models in Industrial Engineering** – An Introductory course in probability theory and quantitative methods. *Department of Industrial and Manufacturing Engineering, Penn State*

IE425: **Introduction to Operations Research** – An Introductory undergraduate course in operations research methods. *Department of Industrial and Manufacturing Engineering, Penn State*

IE480W: **Capstone Design** – A course integrating material from the curriculum toward completion of a project with one of the department's industry partners. *Department of Industrial and Manufacturing Engineering, Penn State*

IE590: **Industrial Engineering Colloquium** – Survey of current research in Industrial Engineering, with invited speakers of international renown. *Department of Industrial and Manufacturing Engineering, Penn State*

EPD160: **Introduction to Engineering** - This course is designed so that freshman students, working in teams, solve a relevant problem. The underlying goal of the course is to give students experience in engineering early on in their academic programs, and to allow them to make satisfactory career choices. *Department of Industrial Engineering, UW-Madison*

IE315: **Production Planning and Control** - Techniques and applications of control concepts in the design of inventory, production, quality, and project-planning systems. *Department of Industrial Engineering, UW-Madison*

MN681: **Management Science** – (Course taught both in-class and via video based instruction.) Experience in modeling and solving deterministic and stochastic quantitative business decision problems. The focus of the course is on modeling such decision problems. *Department of Management, Auburn University*

MN604: **Foundations of Statistics** - (Course taught both in-class and via video based instruction.) Skills in the application of statistical methods including multiple linear regression and forecasting based on time series analysis. Methods are applicable to business decision problems, affecting a company's profit, market demand, selling prices, market share, or demand, etc. *Department of Management, Auburn University*

MN474: **Quality Assurance** - Students gain skills in the application of various statistical methods related to quality control including control charts, acceptance sampling, and design of experiments. *Department of Management, Auburn University*

MN 690: **Advanced Topics in Quality Control**. An advanced course on statistical process control focusing on systems that violate traditional control charting assumptions. *Department of Management, Auburn University*

Funded Teaching Award

The Pennsylvania State University, Harold and Inge Marcus Dept. of Industrial and Manufacturing Engineering, Bastian Award for Curriculum Enhancement, "Decision Analysis Enhancement of Small Business Operations," $10,000, January 1, 2005- December 31, 2005.

Ph.D. Student Advisor and Committee Chair

1. Napassavong Osothsilp, "Worker-Task Assignment Based on Individual Learning, Forgetting, and Task Complexity," Ph.D. 2001. (University of Wisconsin-Madison)

2. Karndee Leopairote, "Policies for Multi-Skilled Worker Selection, Assignment, and Scheduling," Ph.D. 2003. (University of Wisconsin-Madison)

3. Yuri Ramirez, "Knowledge Worker Productivity Measurement and Improvement," Ph.D. 2006. (co-advisor Vicki Bier, Univ. of Wisconsin-Madison)

4. Bex George Thomas, "A Multivariate Model for Workforce Planning," Ph.D. 2006. (co-advisor, L. Shi, Univ. of Wisconsin-Madison)

5. Ruwen Qin, "A Real Options Framework for Workforce Flexibility Decision Making," Ph.D. 2007. The Pennsylvania State University.

6. Sungsu Kim, "Worker Flexibility in Manufacturing Performance" Ph.D. 2010, The Pennsylvania State University

7. Jaehyon Paik, "A Novel Training Paradigm for Knowledge and Skills Acquisition," Ph.D., 2011, co-advisor with F. Ritter, Pennsylvania State University.

8. Frank Bentefouet, "Workforce Scheduling in the Context of Human Performance Variability: A Task Approach", Ph.D., 2013, The Pennsylvania State University

9. Gretchen Macht, "Modeling Psychometrics for Team Performance: Personality & Emotional Intelligence, " Ph.D., 2014, The Pennsylvania State University

10. Kelly Yip, "Pattern Detection in Sequential Data" Ph.D. 2015, The Pennsylvania State University.

11. Ji-Eun Kim, "Predictive Modeling of the Deadline Rush Effect," Ph.D. 2017, The Pennsylvania State University.

12. Yaileen Mendez Vasquez, Ph.D. 2019 "Behavioral Complexity in Quality Engineering Systems," Oregon State University

13. Yuzhi Sun, Ph.D. 2022, "EEG metrics related to Project Management Learning Outcomes" Oregon State University

14. Fatimeh Dalilian, "Biometric measures of Driver behavior in the presence of Roadside design features," University of Iowa. 2020-present.

Ph.D. Student Committees

1. Vivian Yeh, Ph.D. 2000, "Job and Organizational Determinants of Employees' Practices of Total Quality Management in the Public Sector," The Univ. of Wisconsin-Madison, Advisor: F. Sainfort

2. Ming-Shu Kao, Ph.D. 2000 "A Unified Framework for Statistical Process Control of a Dynamic-Stochastic System in Manufacturing Transitions," Univ. of Wisconsin-Madison, Advisor: H. Nembhard

3. Lisa Zidek, Ph.D. 2001, "A First Look at Home Health Aide Stress," Univ. of Wisconsin-Madison, Advisor: P. Brennan

4. Jim Lin, Ph.D. 2001, "Applications of a Mechanical Model of the Human Operator in Power Hand Tool Operation," Univ. of Wisconsin-Madison, Advisor: R. Radwin

5. Adsada Sae-Ngow, Ph.D. 2001, "Effects of the stress management program on occupational stress of industrial workers," Univ. of Wisconsin-Madison, Advisor: P. Carayon

6. Adam Resnick, Ph.D. 2002, Univ. of Wisconsin-Madison, Advisor: L. Shi, J. Rappold

7. Josey Chu, Ph.D. 2002, "A system Engineering Framework: Integrating the Balance Model to Knowledge Management Across Organizations," Univ. of Wisconsin-Madison, Advisor: M. Smith

8. Min Wang, Ph.D. 2003, "Building Blocks for Cost-Effective Preventive Maintenance Programs Based on Approximately Optimal Surveillance Testing Policies," Univ. of Wisconsin-Madison, Advisor: V. Bier

9. Young-Ho Rhee, Ph.D. 2003, "Employees' Perception of Organizational Characteristics, Stress, and Technology Acceptance," Univ. of Wisconsin-Madison, Advisor: M. Smith

10. Kuang-Yi Wen, Ph.D. 2003, "Measuring Needs Of Caregivers Of Cancer Patients Across The Advanced Cancer Trajectory: Comparison Of Three Priority Setting Methodologies," Univ. Of Wisconsin-Madison, Advisor: D. Gustafson

11. Sungsoon Park, Ph.D. 2005, Towards Interdisciplinary Perspective Of Electronic Negotiation Support Systems," Penn State Univ., Advisor: L. Rothrock

12. Hari Thiruvengada, Ph.D. 2005, "Developing a Formalism for Gibson's Affordances Using Colored Petri Nets," PSU, Advisor: L. Rothrock

13. Reetabrata Mookherjee, Ph.D. 2006, "A Computable Theory Of Dynamic Games And Its Applications," PSU, Advisor: T. Freisz

14. Atul Rangarajan, Ph.D. 2007, "Newsvendor Inventory Decisions Under Risk: Analytical And Evolutionary Agent Models," PSU, Advisor: R. Ravindran

15. Satama Sirivunnabood, Ph.D. 2008, "Network Reconfiguration For Supply Chain Risk Mitigation," PSU, Advisor: S. Kumara

16. Jong Wook Kim, Ph.D. 2008, "Procedural Skills: From Learning To Forgetting," PSU, Advisor: R. Koubek

17. Chi-Chun Pan, Ph.D.2008, "Automatic Extraction And Geo-Spatial Visualization Of FEMA National Situation Updates," PSU, Advisor: S. Kumara

18. Natasa Vidic, Ph.D. 2008, "Developing Methods To Solve The Workforce Assignment Problem Considering Worker Heterogeneity And Learning And Forgetting," University of Pittsburgh, Advisor: B. Norman

19. Seung Ki Moon, Ph.D. 2008, "A Strategic Module-Based Platform Design Method For Developing Customized Families Of Products And Services," PSU, Advisor: T. Simpson

20. Ming-I Lin, Ph.D. 2009, "The Development of a Physiological based sampling Pump for Exposure Assessment," PSU, Advisor: A. Freivalds

21. Vinay S. Kumar, Ph.D. 2009, "Systems Based Optimization Approaches To Analyze and Improve Metabolic Networks," PSU, Advisor: S. Kumara

22. Gen-Han Wu, Ph.D. 2009, "Fleet Planning in the Car Rental Business," PSU, Advisor: T. Cavalier

23. Maria Velazquez, Ph.D. 2010 "Understanding the Effects of Positive and Negative Affect in Perceived Usability," PSU, Advisor: G. Kremer

24. David Sudit, Ph.D. 2012 "Hard and Soft Sensor Information Fusion using Cognitive Injection Process for Decision Making," PSU, Advisor: S. Kumara

25. Kelly Sprehn, Ph.D. 2013 "Individual Differences and the Effect of Information Format on Decision Making," PSU, Advisor: G. Kremer

26. Jung Hyup Kim, Ph.D., 2013, "Developing a Meta Cognitive Training Framework in Complex Dynamic Systems using a Self-Regulated Fuzzy Index," PSU, Advisor: L. Rothrock

27. Sunghee Choi, Ph.D. 2015, "Blood Supply Chain Operational Efficiency Improvement By Agent Based Simulation," PSU, Advisor: S. Kumara

28. Inki Kim, Ph.D. 2015, "Preemptive Interventions to Increase Patient Safety by using Behavior Based Feedback," PSU, Advisor: A. Freivalds

29. Jay Cho, Ph.D. 2017 "Using a Desk Compatible Recumbent Bike to Promote Physical Activity in the Office," PSU, Advisor: A. Freivalds

30. Angela Garza, 2012-2017, "A Multi-Agent System for Manpower Modeling," PSU, Advisor: S. Kumara

31. Benjamin Noah, Ph.D. 2016, "Modeling Mental Workload for supervisory control using Eye-tracking," Penn State, Advisor: L. Rothrock

32. Yuchen Li, Ph.D. 2016, "Assembly Line Rebalancing with Non-Constant Task Time Attribute" Rutgers, The State University of New Jersey, Advisor: Tom Boucher

33. Kiseok Sung, 2015-2017, "Biomechanical Analysis of Thumb Flexion Through Cadaveric Experiment," Penn State, Advisor: A. Freivalds

34. Karina Roundtree, Ph.D. 2020, "Achieving Transparency in Human-Collective Systems," Oregon State University, Advisor: Julie Adams

35. Shefaa Baik, Ph.D. 2021, "Operations Research Models for Blood Supply Chain Network Design for Disaster Planning," Oregon State University, Advisor: H. Vergara

15. Kiana Kia "Vibration and Motion effects on task performance" Oregon State University, co-advisor with Jay Kim, 2017-2022.

16. Asieh Varyani, "Biometric measures of Surgeons in an Operating Room, with measurable distractions," co-advisor with Joe Agor, Oregon State U. 2018-2020.

Post Doctoral Scholars Advised

1. Jihong Yang, Postdoctoral Research Associate, (2005 - 2006), Project Title: "Association Rule Development for Workforce Scheduling"

2. Jordi Olivella Nadal, Visiting Scholar, (2011), Castelldefels School of Technology, Spain, Project Title: Cross Training Scheduling with Uncertain Demand"

3. Min Xiao, Visiting Research Assistant, (2012). Donghua University, Shanghai, China, Project Title: "Knowledge Worker Performance based on Knowledge Intensity"

4. Su Jiafu, Visiting Research Assistant, (2015 - 2016), Chongqing University of China Project Title: "Knowledge diffusion for customer collaborative production systems,"

5. Yuan Feng, Visiting Research Assistant, (2015 - 2016), Tsinghua University, Beijing China, Project Title: "The Impact of Learning and Forgetting on Cross Trained Workers in manual/automated Production Lines,"

6. Rong Chen, Visiting Faculty Research Assistant (2018-2019), Hefei Normal University, Hefei, China, Project Title: Team Formation Optimization with Learning and Forgetting,"

7. Gulcin Bektur, Visiting Faculty, Postdoctoral Researcher (2022-2023), The Multi-objective Team Assignment Problem with Knowledge Acquisition.

M.S. Theses Advised

1. Wayne Lanning, MSE, UW-Madison 1999 "Dynamic Workforce Selection for the Domestic Workforce"

2. Rahul Mehendale, MSE, UW-Madison 1999 "Worker Selection in Logistics and Distribution"

3. Hildania Christensen, MSE, UW-Madison 1999 "Criteria for Learning Model Selection"

4. Lori Gagnon, MSE, UW-Madison 2000 "Patient Data and Health Informatics Costs and Benefits"

5. Chen Chen, MSE, UW-Madison 2001 "Modeling Vaginal Birth after C-section Patient Outcomes"

6. Bex Thomas, MSE, UW-Madison 2001 "On-Line Analytical Processing of Performance Data"

7. Kuang-Yi Wen, MSE, UW-Madison 2000 "Logistic Regressing and the Medical Expenditure Panel Survey (MEPS) data"

8. Vikram Sharma, MSE, UW-Madison 2000 "Modeling Knowledge Transfer and Learning in Manufacturing Systems"

9. Kaweesak Boonyapornnad, MSE, UW-Madison 2000 "An Assessment of Experiential Learning Models for Production Systems Research"

10. Vikas Mehrotra, MSE, UW-Madison 2000 "Transformations and Fusion of Human Performance Data"

11. Joshua Kreklow, MEPP, UW-Madison 2003 "Motivators and Success Factors for Knowledge Management Systems"

12. Misty Metschke, MEPP, UW-Madison 2003, "An Engineering Management Approach for Worker Selection in Cross Training systems"

13. Damini Dawar, MSE, UW-Madison 2003 "Computer Programmer Performance Measurement and Team Project Performance"

14. Kavita Krishnamurthy, UW-Madison 2003 "Quality Control of Programming Activities for Mission Critical Applications"

15. Abir Fatthalah, Masters Degree, Ecole Centrale Paris, 2007 "Breast Cancer Screening locational distribution and Equity in Metropolitan Paris"

16. Frank Bentefouet, Masters Degree, Ecole Centrale-Paris, 2007 "Properties of Learning Models of Human Performance"

17. Shrikanth Janardhana, M.S., Penn State, 2010 "A Worker Scheduling Heuristic for Assembly Lines"

18. Rohini Prabhakar, M.S., Penn State, 2010, "A new Workforce Scheduling Policy"

19. Siddarth Prakasam, M.S., Penn State, 2011 "Information Visualization for Health Systems"

20. Yu Feng, M.S., Penn State, 2011, "A Pilot Study on Patient Complaints by Regression"

21. Sunghee Choi, M.S., Penn State, 2012, "Radio Frequency Identification (RFID) in Blood Supply Chain Management"

22. Shivanker Singh, M.S., Penn State, 2012, "Throughout Improvement and Rework Reduction for Large Structural Complex Engineered Components"

23. Pragya Bhargava, M.S., Penn State, 2013 "Using Simulation for Improving the Performance of a Manufacturing System Through Dynamic Workforce Scheduling"

24. Rahul Yadav, M.S., Penn State, 2015 "Five Phase Supplier Selection"

25. Ayush Dhurka, M.S. Penn State, 2016, "Data Driven Approach towards Evaluating New Product Features and Estimating New Product Potential in the Machining Cutting Tools Industry"

26. Paul Kloepping, MBA Thesis, 2016. Naval Postgraduate School, "Deadline Tightness and Performance in Operational and Logistics Contexts."

27. Chenmu Wang, M.S. Penn State, 2016 "Use of EEG to Instrument Performance in Cyber-learning"

28. Yuzhi Sun, M.S. Penn State, 2017 "EEG metrics related to Project Management Learning Outcomes"

29. Bhuvanamalini Karaikudi Ramesh, M.S. Oregon State University, 2017. "Healthcare Quality Improvement Projects - From Quality Directors' Perspective."

30. Rime Elatlassi, M.S. Oregon State University, 2018 "Modeling EEG metrics for emotion, and performance"

31. Karina De Los Angeles Suarez Aimacana, M.S., 2019 "The Effects of Knowledge Representation on behavior and learning outcomes in Online Learning"

M.S. Thesis Committee Member

1. Sean Sestson, M.S. Oregon State University, M.S. 2019, "Problem Solving Personas of Civil Engineering Practitioners using Eye Tracking Techniques."

2. Simon Kahsai, M.S. Oregon State University, M.S. 2020 "Optimized placement of bio-retention cells and infiltration trenches as a Green Infrastructure"

3. Taiwo Talouwalase, M.S. University of Iowa, M.S. 2021," "A Proposed Model for Assessing the Maturity of a Quality Culture in Manufacturing Organizations"

Undergraduate Research Advisees (Funded REU students)

1. Sarah E. Olmsted, 2003, UW-Madison, "A taxonomy of learning and forgetting models for production systems"

2. Joline A. Neren, 2003, UW-Madison, "On-Line Processing: Optimizing Data Utilization in a Business Setting"

3. Dana Heitner, 2003, UW-Madison, "Knowledge Transfer models"

4. Elizabeth Lenthe, 2005, Penn State, "Performance Improvement based on learning before doing"

5. Richard Greatbatch, 2015, Penn State, "Learning behavior measurement using Eye-tracking"

6. Kyle Mink, 2015, Penn State, "Team Cognition with Information"

7. Ozan Can Eren, 2018, Oregon State Univ. "Variation of Eye tracking Data for On-line Learning Research"

8. Jacob Konz, 2021-2022, University of Iowa, "Drone Pilot Skill Acquisition and Behavioral Affect"

9. Charlie Killian, 2021, University of Iowa, "Field of View for Drone Pilot Training"

10. Khang-Le Tan, 2022, University of Iowa, "Time-Series Modeling for Eye-Tracking Data"

Institutional Service

Undergraduate Committee, Business Analytics, Tippie College of Business, 2020-2023

Chair, Dept. Consulting Group (P&T cmte.) UI, ISE dept., 2020-2023

Peer Observation of Teaching POT Committee, UI, ISE dept. 2020-2023

Department Consulting Group (P&T), UI, Business Analytics dept. 2020-2023

Judge, 2021 College of Engineering Student Leadership Awards

Faculty Senator (elected), Oregon State University, 2019-2021

Chair (elected), OSU College of Engineering P&T committee, 2019-2020

OSU College of Engineering, P&T committee, 2018-2019

IE Faculty Search Committee, OSU, 2018-2019

Chair, Industrial and Manufacturing Eng., Graduate Programs Committee, OSU 2018-2020

OSU College of Engineering, EECS School Head Search Committee, 2017-2018.

OSU, Institutional Review Board, *eRA* User Advisory Group, 2016-2017.

MIME Faculty Research Assistant Search Committee, OSU 2016-2017.

MIME, Promotion and Tenure Committee, Mid-tenure review subcommittee. OSU, 2016-2017.

MIME Awards Committee, OSU, 2016-2017

MECOP, High School pre-select, OSU, 2016-2017.

MIME/EECS faculty search committee, Data Science and Engineering, OSU, 2016-2017.

IME Graduate Program Committee, OSU, 2016-2017.

MIME, Marketing, External Communications, and Outreach Committee, OSU, 2016-2017.

Engineering Systems Program, IE representative, PSU, 2014-2016.

IME department Graduate Committee, PSU, 2011-2016

IEGA (Industrial Eng. Graduate-student Association) faculty advisor, PSU, 2014 - 2015.

IME Space Allocation Committee, PSU, 2015

Non-thesis master's degree committee IE department, PSU, 2015.

Panelist, AYFCE 270 – Consumer and Financial Skills, April 21, 2015.

Panelist, Millennium Scholars Program, PSU, Feb. 28, 2015.

INFORMS student chapter faculty advisor, PSU, 2004-2015.

IME department Awards Committee, PSU, 2011-2014.

IME department faculty search committee, PSU, 2010-2011.

PSU Graduate Council, 2009-2010.

PSU Senate Committee on Research, 2009-2010.

IME department, Marketing Manager search committee, 2009.

Promotion and Tenure Committee, IE dept., PSU, 2007-2008.

Graduate Admissions Committee, IE dept., PSU, 2005-2006, 2009.

Ecole Centrale-Paris, Graduate School Forum 2006, 2007.

COE Nominating Committee, College of Eng., PSU, 2004-2007.

Graduate Studies and Research Committee, College of Eng., PSU, 2004-2007.

Strategic Planning Committee, IE dept., PSU, 2004-2005.

Candidacy Exam (revision) Committee, IE dept., PSU, 2005-2006.

EPD 100, "Intro. to Industrial Eng." Department Fair, UW-Madison, October 2003.

GERS program conference, "IE Graduate Degrees", UW-Madison, Apr. 2003.

Wunsch Prize Committee, UW-Madison, 2001-2004

GERS Program committee member, UW-Madison, 2002-2004

Mentor, GERS scholar, UW-Madison, 2001-2004.

Mentor, Chancellor's scholar, UW-Madison, 2000-2004.

Chair and convener, DS/OR area group, IE Dept., UW-Madison, 1999-2004

Quantitative Decision-Making Ph.D. qualifying exam committee, UW-Madison, 1998-04

Student Scholarship and Awards Committee, IE dept., UW-Madison, 1998-2004

Graduate Policy and Exams Committee, IE dept., UW-Madison, 1998-2002

Problem Solving Ph.D. qualifying exam committee, IE dept., UW-Madison, 2000-2002.

Stochastic Systems Ph.D. qualifying exam committee, IE dept., UW-Madison, 2000-2002

Quality Engineering Ph.D. qualifying exam committee, IE dept., UW-Madison, 1998-2000

University Committee on Academic Computing, Auburn University, 1996-1998

Statistics Ph.D. preliminary exam committee, Auburn University, 1995-1998

Service to Professional Organizations

Chair, INFORMS- Minority Issues Forum (MIF) Awards committee, 2022.

INFORMS DEI Council Mid-Career Faculty Workshop, panelist, 2021.

INFORMS - Minority Issues Forum (MIF) Awards Committee, 2015-2021.

Englert Theater, Board of Directors 2022-present.

INFORMS Penn State University Student Chapter, faculty advisor, 2005-2015.

President, Board of Directors, Corvallis-OSU Piano International (COPI), 2019 - 2021.

IISE Conference Track Chair, Workforce and Service Systems, IISE Conference, Pittsburgh, PA 2017.

Icelandic Centre for Research, The Icelandic Research Fund, 2016.

International Program Committee, KEOD 8th International Conference on Knowledge Engineering and Ontology Development, 2016

Cluster Chair, Workforce Management and Engineering Invited Cluster, INFORMS, Minneapolis 2013.

Session Chair, Workforce Engineering Invited Session, INFORMS Phoenix, 2012.

Session Chair, Workforce Engineering Invited Session, INFORMS Charlotte, 2011.

Session Chair, Workforce Engineering Invited Session, INFORMS San Diego, 2009.

Session Chair, Workforce, Invited Panel Session, INFORMS Seattle, 2007.

Session Chair, Workforce Engineering Invited Session, INFORMS New Orleans, 2005.

Session Chair, Workforce Engineering Invited Session, INFORMS San Jose, 2002.

Session Chair, Workforce Engineering Invited Session, INFORMS Miami, 2001.

Society of Manufacturing Engineers, Senior Chapter Treasurer, (Chapter 75), 2001.

Society of Manufacturing Engineers, Student Chapter faculty advisor, (S133), 2000-2003.

Reviewer, Israel Science Foundation (ISF), 2012, 2015

National Science Foundation, (SEE) Review Panel, 2007.

Panelist, National Society of Black Engineers, Convention, Recruitment Panel, Pittsburgh, 2005,

The National Science Foundation, Innovation and Organizational Change Program, 2003

The National Science Foundation, (DMII) Review Panel, 2002, 2003.

Social Sciences and Humanities Research Council of Canada, 2002

The National Science Foundation, Decision Risk and Management Science Program, 2000.

Editorial Relationships

Editorial Board, POMS Journal (Management of Technology Department), 2003-present.

Associate Editor, HFEM&SI (Human Factors and Ergonomics in Manufacturing and Service Industries), 2015-2017

Associate Editor, IJAIE (Int. Journal of Applied Industrial Eng.) 2009 – present

Service to Journals, Publications, and Agencies

Swiss National Science Foundation 2018, 2019

Computers and Industrial Engineering, 2015, 2016, 2017(3), 2018 (4)

Icelandic Research Fund, 2018,

Production and Operations Management 2012, 2013, 2014, 2016

Human Factors and Ergonomics in Manufacturing & Service Industries, 2016-2017

The International Journal of Production Research, 2004, 2008, 2009, 2010, 2012, 2013(2), 2014, 2015(5), 2016(2).

CRC Press, 2003, 2005, 2007, 2009, 2016

The European Journal of Operational Research, 2003, 2004(2), 2007, 2008, 2009, 2015, 2016

International Journal of Production Economics, 2009, 2010, 2011(2), 2012(2), 2013(2), 2014(2), 2015(3), 2016.

Pearson Education, textbook review, 2015.

Management Science, 2002, 2009, 2010, 2011(2), 2012, 2014

IIE Transactions, 2002, 2003, 2007, 2010(2)

IEEE Transactions on Engineering Management, 2003, 2010

ICED, International Conference on Engineering Design, 2007(6)

EEE Transactions on Systems Man and Cybernetics, 1999, 2005, 2009(2)

Production and Operations Management Journal, 2004, 2009, 2013.

OR Letters, 2003

IEEE Transactions on Engineering Management, 1999, 2002, 2005, 2010

Journal of Experimental Psychology, 2002, 2004

Lawrence Erlbaum Associates, Publishers – Book review, 2002

Duxbury -Book review, 2002

Journal of Experimental Psychology: Applied (American Psychological Association), 2001

Risk Analysis, A Journal of the Society for Risk Assessment, 1999, 2000(2), 2001.

Prentice Hall Publishing – Book review, 2001, 2008, 2015

Lawrence Erlbaum Associates, Publishers – Book review, 2001.

Journal of Operations Management, 2000.

Omega, The International Journal of Management Science, 1996,1997.

Operations Research, The Journal of the Operations Research Society of America, 1994.