Karen Manning Bursic, Ph.D., P.E.
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Swanson School of Engineering
University of Pittsburgh
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EXPERIENCE

Dr. Bursic has had a successful academic career in Industrial Engineering that includes administration, teaching, and research. Her career has also included industry experience in quality and operations management consulting, production management and industrial engineering. She has developed outstanding business, communication, and interpersonal skills through considerable educational, consulting, service, and production plant experience.

CAREER DEVELOPMENT

University of Pittsburgh
Department of Industrial Engineering

Professor (September 2021 – Present); **Undergraduate Program Director (**July, 2007 – Present); **Associate Professor (**September 2015 – August 2021)**; Assistant Professor (**September, 2008 – August 2015); **Adjunct Professor (**August, 1994 – August, 2008)

- Responsible for undergraduate curriculum development and student services for the Industrial Engineering program as an appointment stream faculty member.
- Teaching courses in engineering computing, engineering economics, probability and statistics, and engineering and project management at the undergraduate and graduate level.

University of Pittsburgh — **Interim Director, Freshman Program**
Freshman Engineering Program — July, 2005 – August 2005

- Responsible for directing all administrative activities related to the Freshman Engineering Program during short vacancy in position left by unexpected staff departure.

University of Pittsburgh — **Research Assistant Professor**
Department of Industrial Engineering — August, 1994 - May, 1997

- Conducted research on Engineering Education.
- Activities included designing and conducting experiments, managing student assistants, publication of research results, etc.

The Pennsylvania State University — **Lecturer**
New Kensington and Monroeville Campuses — January, 1994 - August, 1995

- Taught "Introductory Statistics" to undergraduate students.

University of Pittsburgh — **Lecturer**
Katz Graduate School of Business — January, 1992 - August, 1992

- Taught "Behavioral Science in Business" in the part-time MBA program.

Bursic Consulting **Consultant**
August, 1991 - August, 1994

- Served various clients as an independent consultant in quality and productivity.
- Activities included developing and teaching seminars, researching, and writing.
- Taught seminars for the American Society for Quality Control and other clients including a refresher course for the Certified Quality Technicians (CQT) exam.

Ernst and Young **Senior Consultant**
Management Consulting January, 1990 - July, 1991

- Assigned to the corporate services area which provided professional consulting services to various clients.
- Consulting areas included operations and productivity improvement, total quality management (including training), employee involvement, and so forth.
- Responsible for developing a quality and operations services market in the Pittsburgh area.

University of Pittsburgh **Research/Teaching Assistant**
Industrial Engineering Department September, 1987 - December, 1989

- Obtained a Doctorate in Industrial Engineering as a full-time student and research/teaching assistant.

General Motors Corporation **Supervisor; Industrial Engineer**
BOC - Pittsburgh Plant June, 1984 - August, 1987

- Directed and supervised operations, quality and maintenance activities on the production floor. Monitored and controlled assigned production area.
- Coordinated methods improvements and conducted time studies, calculated operational cycle times and established production standards. Plant coordinator for ergonomics, established and chaired an ergonomics committee.

EDUCATION

University of Pittsburgh
Doctorate of Philosophy, Industrial Engineering, April 1990;
Master of Science, Engineering Management, December 1987;
Bachelor of Science, Industrial Engineering, April 1984.

DISSERTATION RESEARCH

Title of Dissertation: "Factors Contributing to the Successful Use of Teams (And Benefits Gained From Their Use) in Manufacturing Organizations"; Committee Chair: Dr. David I. Cleland

HONORS AND PROFESSIONAL SERVICE

Served on 3 National Science Foundation Proposal Review Panels since 2004

Grant Award from the Engineering Economy Division of ASEE for Best Paper in 2020 in *The Engineering Economist*

Best Paper Award, ASEE Annual Conference; Engineering Economy Division; June 2017

Institute of Industrial and Systems Engineers, Engineering Economy Division Outstanding Teaching Award, 2015

University of Pittsburgh Swanson School of Engineering Outstanding Educator Award, 2014

Registered Professional Engineer (Pennsylvania), 1995-Present

Albert G. Holzman Scholarship for Excellence, 1988

Gilbreth Memorial Fellowship, 1988

Senior Member of the Institute of Industrial and Systems Engineers, Annual Conference Host Committee 2017; Scholarship Fund Trustee Board Member (National) 2014-2018; Board of Directors, Pittsburgh Chapter 2005-2007, Programs Committee Chair Pittsburgh Chapter 2004; Academic Affairs Chair Pittsburgh Chapter 2007-2017

Member of the American Society for Engineering Education, Delegate to the Commission on Diversity, Equity, and Inclusion, 2018 - present; Engineering Economy Division: 2014-2016 Division Chair, 2013-2014 Program Chair, 2012-2013 Secretary/Treasurer; 2011-2012 Newsletter Editor

ASQ Certified Quality Engineer

Member of Tau Beta Pi - Engineering Honor Society;

Member of Alpha Pi Mu - Industrial Engineering Honor Society.

PUBLICATIONS

Journal Papers

Bursic, K.M. (2020) An engineering economy concept inventory, *The Engineering Economist*, 65:3, 179-194, DOI: 10.1080/0013791X.2020.1777360 (Best Paper Winner).

Scala, N.M., Tomasi, S., Goncher, A., & Bursic, K.M. (2017). Motivation and Analytics: Comparing Business and Engineering Students. *INFORMS Transaction on Education*, Articles in Advance, https://doi.org/10.1287/ited.2017.0187.

Clark, R.M., Besterfield-Sacre, M., Budny, D., Bursic, K.M., Clark, W.W., Norman, B.A., Parker, R.S., Patzer, J.F., & Slaughter, W.S. (2016). Flipping engineering courses: A school wide initiative. *Advances in Engineering Education*, 5(3).

Atman, C.J., Chimka, J.R., Bursic, K.M., & Nachtmann, H.L. (1999). A Comparison of Freshmen and Senior Engineering Design Processes. *Design Studies*, 20(2), 131-152.

Atman, C.J. & Bursic, K.M. (1998). Verbal Protocol Analysis as a Method to Document Engineering Student Design Processes. *Journal of Engineering Education*, 87(2), 121-132.

Bursic, K.M. & Atman, C.J. (1997). Information Gathering: A Critical Step for Quality in the Design Process. *Quality Management Journal*, 4(4), 60-75.

Atman, C.J. & Bursic, K.M. (1996). Teaching Engineering Design: Can Reading a Textbook Make a Difference. *Research in Engineering Design*, 8(4), 240-250.

Bursic, K.M. (1992). Strategies and Benefits of the Successful Use of Teams in Manufacturing Organizations. IEEE *Transactions on Engineering Management*, 39(3), 277-289.

Bursic, K.M. & Cleland, D.I. (1991). Strategic Technology Management. *Engineering Management Journal*, 3(2), 21-29.

Books

Cleland, D.I., Bursic, K.M., Puerzer, R. & Vlasak, A.Y. (Editors) (1998 and 1993). *Project Management Casebook and Instructor's Manual*, Sylva, NC: Project Management Institute.

Cleland, D.I. & Bursic, K.M. (1992). *Strategic Technology Management: Systems for Products and Processes* American Management Association.

Edited Books and Chapters

Needy, K.L. & Bursic, K.M. (Editors) (2020) Engineering Economics section of *Maynard's Industrial Engineering Handbook*, New York: McGraw-Hill.

Bursic, K.M. (2004). Self-Managed Production Teams. *Field Guide to Project Management* (Edited by D.I. Cleland), 2nd edition, Hoboken, NJ: John Wiley & Sons, Inc.

Bursic, K.M. (1990). Production Teams in Manufacturing. *The Automated Factory Handbook* (Edited by Cleland, D.I. and Bidanda, B.), Blue Ridge Summit, PA: TAB Books.

Conference Proceedings

Bursic, K.M. (2021). Course Strategy: A Little Bit of Everything is Probably Too Much, *2020 ASEE Annual Conference & Exposition, Virtual*.

Bursic, K.M. (2017). Work in Progress – An Engineering Economy Concept Inventory. *2017 ASEE Annual Conference & Exposition, Columbus*, Ohio. https://peer.asee.org/29138 (Best Division Paper winner).

Lynch, P.C., Kimple, J.F., & Bursic, K.M. (2016). Developing Essential Business and Engineering Skills through Case Competitions. *Proceedings of the 2016 American Society for Engineering Education Annual Conference*, New Orleans, LA.

Clark, R.M., Budny, D., Bursic, K.M., & Besterfield-Sacre, M. (2014). Preliminary Experiences with "Flipping" a Freshman Engineering Program Course. *Proceedings of the 6th First Year Engineering Experience (FYEE) Conference*, College Station TX.

Streiner, S.C., Besterfield-Sacre, M., Shuman, L.J., & Bursic, K.M. (2014). An Approach to Evaluate Engineering Global Preparedness in Industrial Engineering Curricula. *Proceedings of the 2014 Industrial Engineering Research Conference,* Montreal, QC.

Bursic, K.M. (2012). "Does the Use of Clickers Increase Conceptual Understanding in the Engineering Economy Classroom," *Proceedings of the 2012 American Society for Engineering Education Annual Conference,* San Antonio Texas.

Shuman, L.J., Besterfield-Sacre, M.E., Siewiorek, N.., Bursic, K.M., & Vidic, N. (2012). CCLI: Model Eliciting Activities: Experiments and Mixed Methods to Assess Student Learning III. *Proceedings of the 2012 American Society for Engineering Education Annual Conference*, San Antonio Texas.

Siewiorek, N., Shuman, L.J., Besterfield-Sacre, M.E., Vidic, N., Bursic, K.M., Streiner, S., Coull, J. (2012). Students' Confidence Levels in Technical Concept Knowledge with Model-Eliciting Activities. *Proceedings of the 2012 American Society for Engineering Education Annual Conference*, San Antonio Texas.

Bursic, K.M., Shuman, L.J., & Besterfield-Sacre, M. (2011). Improving Student Attainment of ABET Outcomes Using Model-Eliciting Activities (MEAs). *Proceedings of the 2011 American Society for Engineering Education Annual Conference*, Vancouver, BC.

Shuman, L.J., Besterfield-Sacre, M.E., Yildirim, T.P., Bursic, K.M., & Vidic, N. (2011) CCLI: Model Eliciting Activities: Experiments and Mixed Methods to Assess Student Learning – Part II. *Proceedings of the 2011 American Society for Engineering Education Annual Conference*, Vancouver, BC.

Vidic, N., Shuman, L., Besterfield-Sacre, M., Bursic, K.M., Yildirim, T.P., & Siewiorek, N. (2011) Learning Impacts Gained from Introducing Model Eliciting Activities (MEAs) in an Introductory Statistics Course. *Proceedings of the 2011 Industrial Engineering Research Conference,* Reno, NV.

Bursic, K.M., Shuman, L., Besterfield-Sacre, M., Yildirim, T.P., & Siewiorek, N. (2010). Improving Conceptual Learning in Engineering Economy using Model-Eliciting Activities (MEAs). *Proceedings of the 2010 Industrial Engineering Research Conference*, Cancun, Mexico.

Budny, D., Lund, L., Bursic, K.M., & Vidic, N. (2010). Reviewing the Success of a Freshman Programming Course. *2010 ASEE North Central Section Regional Conference Proceedings,* Pittsburgh, PA.

Shuman, L., Besterfield-Sacre, M., Clark, R., Yildirim, T.P., & Bursic, K.M. (2009). E-MEAs: Introducing an Ethical Component to Model Eliciting Activities. *Proceedings of the 2009 American Society for Engineering Education Annual Conference and Exposition*, Austin, TX.

Bursic, K.M. & Needy, K.L. (2008). Implementing International Requirements in Undergraduate Industrial Engineering Programs Proceedings of the *2008 American Society for Engineering Education Annual Conference Proceedings*, Pittsburgh, PA.

Bursic, K.M., Needy, K.L., Norman, B.A., & Hunsaker, B. (2007). The Challenges of Undergraduate Industrial Engineering Curriculum Reform at the University of Pittsburgh. *2007 Industrial Engineering Research Conference Proceedings,* Nashville, TN.

Bursic, K.M. (2006). Applying Engineering Economic Analysis to Contemporary Problems with Global and Societal Implications. *Proceedings of the 2006 American Society for Engineering Education Annual Conference,* Columbus, OH.

Wilson, J.P., Needy, K.L., & Bursic, K.M. (2003). Integrating Engineering Economic Analysis across the Engineering Curriculum. *Proceedings of the 2003 American Society for Engineering Education Annual Conference, Nashville, TN*.

Chimka, J.R., Atman, C.J., & Bursic, K.M. (1997). Describing Student Design Behavior. *Proceedings of the 1997 American Society for Engineering Education Annual Conference, Milwaukee, WI.*

Atman, C.J., Bursic, K.M., & Lozito, S.L. (1996). An Application of Protocol Analysis to the Engineering Design Process. *Proceedings of the 1996 American Society for Engineering Education Annual Conference,* Washington DC.

Moore, P.L., Atman, C.J., Bursic, K.M., Shuman, L.J., & Gottfried, B.S. (1995). Do Freshmen Design Texts Adequately Define the Engineering Design Process? *Proceedings of the 1995 American Society for Engineering Education Conference,* Anaheim, CA.

Atman, C.J., Bursic, K.M., & Lozito, S.L. (1995). Gathering Information: What Do Students Do? *Proceedings of the 1995 American Society for Engineering Education Annual Conference,* Anaheim, CA.

Non-refereed Publications

Conference Papers and Other

Bursic, K.M. (1991). The Use of Teams for Improving Productivity and Quality in Manufacturing. *Productivity & Quality Management Frontiers III, Proceedings of the Third International Conference on Productivity and Quality Research*.

Cleland, D.I., Bursic, K.M., & Wain, H.W. (1990). A Strategic Technology Management System *Management of Technology II, Proceedings of the Second International Conference on Management of Technology*.

Cleland, D.I., Bursic, K.M., & Wain, H.W. (1989). A Strategic Technology Monument System: The Project Perspective. *Proceedings of the 1989 Project Management Institute Seminar/Symposium*, Atlanta, GA.

Bursic, K.M. (2006) Review of "Engineering Economy", 13th edition, by Sullivan, et. al., *The Engineering Economist*, 51(4), 361-362.

Invited Presentations

Bursic, K.M. (2012) Engineering Education Research: Highlights from Successful Efforts to Improve Engineering Students' Preparation for a Global and Technical Society. *INFORMS Baltimore Chapter*, Baltimore, MD.

Bursic, K.M. (2012) Implementing an International Requirement in a Traditional IE Program. *Women in Industrial Engineering* Academia (Poster Presentations), Istanbul, Turkey.

Bursic, K.M. (2011) Model-Eliciting Activities (MEAs) in the Classroom. *University of Arkansas Department of Industrial Engineering*, Fayetteville, Arkansas.