

WENDY L. MARTIN

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Business Statistics | Data Analysis | Data Mining | Engineering Administration/Management |
Engineering Statistics | Manufacturing (Mechanical Engineering) | Manufacturing
Engineering | Manufacturing Processes (Industrial Engineering) | Problem Solving |
Production/Operations Management | Quality Control (Engineering) | Quality/Product
Control | Reliability (Engineering) | Statistics

ACADEMIC APPOINTMENTS

W. Edwards Deming Professor of Management (Endowed Position) Associate Professor, Teaching University of Colorado, Boulder	2022 – current
W. Edwards Deming Professor of Management (Endowed Position) Assistant Professor, Teaching University of Colorado, Boulder	2018 – 2022
Instructor, Engineering Management University of Colorado, Boulder	2014 – 2018
Faculty, Electro-Mechanical and Energy Technology Front Range Community College, Fort Collins, CO	2011 – 2014

EDUCATION

ME University of Colorado, Engineering Management <i>Emphasis - Applied Statistics & Industrial Research</i> <i>Master Black Belt – Six Sigma</i>	August 2014
BS Purdue University, Mechanical Engineering	May 1993

TEACHING EXPERIENCE

EMEN-MGMT 4400 **Quality Management** 2017 – 2023
Introduces the concepts, tools and techniques used in the management and measurement of quality and productivity in a business environment. Developed in person, online and asynchronous versions of the course to meet students' needs.

EMEN 5005 **Introduction to Applied Statistics** 2020 – 2023
Examines the foundations for statistical reasoning and statistical applications related to business and engineering decision-making. Topics include descriptive statistics, probability, discrete and continuous probability distributions, sampling theory and sampling distributions, statistical inference including point and interval estimation and hypothesis testing for one and two samples (independent / dependent) situations. Nonparametric statistical procedures are also explored.

WENDY L. MARTIN

- EMEN 5041** **Performance Excellence** 2015 – 2021
Examines contemporary models and components for developing and maintaining a high-powered organization, with the maximization of profitability in the presence of financial growth as a targeted objective. Includes developing and deploying a Strategic Plan throughout the organization, using the TAU/CPR model to immediately improve profitability without capital investment, and integrate a model for Customer Satisfaction improvement to identify value added improvement opportunities.
- EMEN 5042** **Data Science for Quality Improvement** 2014 – 2021
Develop in-depth expertise in the concepts, tools and techniques used in the management and measurement of quality and productivity using the statistical programming language, R.
- EMEN 5043** **Quality Systems and Engineering** 2015 – 2021
A study of methods, tools, techniques, and systems associated with advanced quality applications including automatic control systems, reliability methods, root cause analysis and Design for Six Sigma.
- EMEN 5500** **Lean and Agile Management** 2022 - 23
A study of lean and agile concepts and tools to improve customer value, improve processes and reduce waste. Examine and apply lean and agile principles in diverse circumstances including hardware/software, product development/ongoing operations and manufacturing products/providing services. Students apply learning to improving performance in current responsibilities, whether as an individual contributor or as a manager.
- DTSA 5704** **Managing, Describing and Analyzing Data** 2020 - 23
Massively Open Online Course on Coursera that examines data and measurement, descriptive statistics, probability and probability distributions, sampling distributions, error and estimation and two sample hypothesis testing using the statistical programming language, R. Part of the Master of Science in Data Science at the University of Colorado, Boulder.
- DTSA 5705** **Stability & Capability in Quality Improvement** 2022-23
Massively Open Online Course on Coursera that examines analyzing data in terms of process stability and statistical control and why having a stable process is imperative prior to performing statistical hypothesis testing. Students create statistical process control charts for both continuous and discrete data and analyze for statistical control using control rules based on probability. Additionally, they learn how to assess a process with respect to how capable it is of meeting specifications, either internal or external, and make decisions about process improvement, using the statistical programming language, R. Part of the Master of Science Data Science at the University of Colorado, Boulder.
- DTSA 5706** **Measurement Systems Analysis** 2022 - 23
Massively Open Online Course on Coursera that examines analyzing measurement systems for process stability and capability and why having a stable measurement process is imperative prior to performing any statistical analysis. Students analyze continuous measurement systems and statistically characterize both accuracy and precision using R

WENDY L. MARTIN

visualizations, explore application cases in various industries, discuss the latest trends in analytics and AI, and learn with hands-on projects.

PUBLICATIONS

Books

Reviewer *Business Statistics: For Contemporary Decision Making, 10th Edition*, - Black, Ken, Wiley Publishing, 2019

Conference Proceedings (Peer-Reviewed)

Bailey, W., Burns, J., Mellinkoff, B., Spydell, M., “Quantifying operational constraints of low-latency telerobotics for planetary surface operations,” 2018 IEEE Aerospace Conference, Big Sky, MT, USA, 3-10 March 2018

Martin, WB., Burns, J., Mellinkoff, B., Kumar, A., Bell, M., Sandoval, A. “A Methodology to Assess the Human Factors Associated with Lunar Teleoperated Assembly Tasks,” 2020 IEEE Aerospace Conference, Big Sky, MT, USA, 7-14 March 2020

Publications (Non-Reviewed)

Bailey, W., Burns, J., Mellinkoff, B., Spydell, M., “Investigation of minimum frame rate for low-latency planetary surface teleoperations,” Submitted to ArXIV.org, Instrumentation and Methods for Astrophysics, July 12, 2017

PRESENTATIONS AND INVITED LECTURES

Conference Presenter, “AI Prompt Engineering for Education,” Colorado Learning and Teaching with Technology 2023 (Session Leader)

Seminar, “The loneliness of the long-distance teacher,” Discussion Series on Innovative Online & Remote Teaching, July 2020.

Presentation, “Gear Up for Flexible Course Design (and How to Ensure Students are Along for the Ride),” What's Your Plan? A Symposium on Education for Fall 2020, July 2020.

Keynote Address, “Lean Six Sigma,” CenturyLink Network Reliability Managers, January 2014.

OPEN-SOURCE SOFTWARE

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ROIStat Application, Development and Code Contributor for GUI using lolcat package in R.

lolcat package, Contributor to R package for statistical analysis, research and development for statistical analysis and quality improvement.

SELECTED INDUSTRY EXPERIENCE

Whip Mix, Fort Collins, CO October - November 2023

Trainer, Lean Manufacturing, cGMP and GDP

- Developed and delivered training covering Lean Manufacturing
- Developed and delivered training for Current Good Manufacturing Practices and Good Documentation Practices in an FDA regulated industry.

Corden Pharma, Boulder, CO August 2020 – December 2022

Consultant, Operational Excellence

- Executive and team coaching for Lean and Six Sigma Projects
- Developed and delivered Green Belt training for Engineers and Analytical Chemists

Ball Aerospace, Boulder, CO February – April 2021

Trainer, R Statistical Software

- Developed and delivered 13-week R Statistical Software training for Engineers at Ball Corporation.
- Course topics included Getting Started In R, Descriptive Statistics, Probability Distributions, Two Sample Hypothesis Testing, Correlation and Association, Sample Size Calculations and Analysis of Variance.

Fresca Foods, Louisville, CO March 2021

Trainer, Supervisory and Management Skills

- Developed and delivered training covering Safe Work Practices for Managers, and Developing and Training Employees

Front Range Community College, Fort Collins, CO February 2021

Consultant, Developing a Curriculum Process for Contractor's Academy

- Facilitated the curriculum development process for approximately 50 contractors developing a training program for their industry.

Corden Pharma, Boulder, CO December 2020

Trainer, cGMP and GDP

- Developed and delivered training for approximately 450 employees in Current Good Manufacturing Practices and Good Documentation Practices in an FDA regulated industry.

Fresca Foods, Boulder, CO July 2020

Trainer, Train the Trainer

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- Developed and delivered training for subject matter experts to learn how to develop and conduct training in a variety of classroom and/or skills-based settings.
- Course topics include Adult Learning Principles, Dealing with Difficult Behavior, Facilitation Techniques, Setting the Learning Scene, Developing a Training Plan, and Transfer of Learning.

Barber-Nichols, Arvada, CO

June 2020

Trainer, Train the Trainer

- Developed and delivered training for subject matter experts to learn how to develop and conduct training in a variety of classroom and/or skills-based settings.
- Course topics include Adult Learning Principles, Dealing with Difficult Behavior, Facilitation Techniques, Setting the Learning Scene, Developing a Training Plan, and Transfer of Learning.

Corden Pharma, Boulder, CO

May 2020

Trainer, HR and Employment Law

- Developed and delivered training managers covering legal considerations around human resources including workplace harassment, discrimination, compensation, and navigating ADA, FMLA and Workers' Compensation.

Front Range Community College, Fort Collins, CO

August 2019 – Current

Trainer, Northern Colorado Manufacturer's Supervisor Training

- 40-hour training course for new manufacturing business leaders and supervisors in Northern Colorado
- Course topics include Safety, HR and Legal Issues, Defining Jobs, Interviewing and Onboarding, Develop Employees and Yourself, Managing a High Performance Team, Business Acumen, Measurement Problem Solving, Manufacturing Planning, and Operational Improvement.

Pioneer Engineering, Fort Collins, CO

February 2018

Consultant, Measurement Systems Analysis

- Developed Measurement Systems Analysis for new force detection sensor for fluid film bearings.

Ball Corporation, Westminster, CO

July 2015 – 2016

Consultant, Data Mining

- Performed data mining project on shaped can process in Conroe, TX, using advanced techniques including exhaustive CHAID, regression and ANOVA.

INDUSTRY EMPLOYMENT HISTORY

Metal Container Corporation, Windsor

2002 – 2007

Quality Manager / Statistical Quality Control Manager

- Led plant quality improvement from average quality performance in 2003 to number one ranked supplier in quality for all commodities supplied to Anheuser-Busch, Inc. in 2004 and 2005.

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- Customer service representative for the Windsor plant for customers at five filling locations, including Anheuser-Busch, Coca-Cola, and Pepsi. Partnered with customers to help them achieve quality and production goals.
- Leader and member of Total Productive Manufacturing Implementation Team. Through this team's efforts in implementing TPM and maintenance fundamentals, Windsor's Asset Utilization increased by 4.2% and Productivity by 6.2% without major capital investments.
- Spearheaded plant effort in achieving status as Certified Supplier to Anheuser-Busch in December 2002. The plant met all 56 standards in the areas of Safety, Quality Systems, Continuous Improvement, Operations, Improvement Team Performance and Statistical Methods.
- Daily involvement with plant operations to set quality expectations and develop process improvements through applied statistics, procedure refinement and mechanical design.
- Coordinated annual strategic planning. Organized and directed semi-annual quality reviews for executive officers.

Metal Container Corporation, Windsor

2001 – 2002

Engineering Manager / Statistical Quality Control Manager

- Managed budgets for fifteen accounts, including outside contractors, primary materials and repair parts.
- Plant environmental leader. Oversaw 283 environmental compliance and reporting items for local, state and federal government regulations. Maintained and refined procedures and policies for Spill Control, Hazardous Waste Disposal, Air and Water Quality. Won award with the State of Colorado for Best Demonstrated Practices.
- Developed training and certification program for Waste Treatment operators.
- Oversaw building and grounds maintenance, capital projects and contracted equipment maintenance.

Metal Container Corporation, Windsor

1995 – 2001

Statistical Quality Control Manager

- Advanced the operational success of the Windsor Plant through several experiments:
 - Designed and performed metal experiment to study the effect of aluminum ingot casting location on bodymaker jams, showing one supplier yielded significantly higher levels of jam rates. Disqualification of this supplier led to major improvements in plant productivity and cost.
 - Designed and performed reliability study for new design of domer. Results showed an increase in characteristic life of approximately 18 days. Implementation across the plant resulted in significant savings.
 - Developed and implemented process control methodology for Registered Embossing Machine. Use of PRE-Control resulted in improved process capability and elimination of fractured sidewalls.
- Pioneered and refined team systems to help ensure the success of improvement teams. Provided quality training for plant improvement teams: Process Control and Capability, Process Quality Improvement, Continuous Process Improvement, Coaches Training. Served as coach for over ten improvement teams, and as mentor to

WENDY L. MARTIN

- plant coaches. Provided Process Improvement Training to the Fort Collins QA and Brewing Departments.
- Developed, implemented and managed programs for Quality Compliance for quality checks. In one year, our plant vendor rating increased by 3.3%, achieving the highest vendor rating of all MCC can plants.
 - Created and instituted system and procedures for plant Standard Operating Procedures. Led pilot program for online data collection system, resulting in successful implementation across the company.

RESEARCH EXPERIENCE

- Network for Exploration and Space Science**, University of Colorado 2017 - 2020
Statistician, Surface Telerobotics Exploration Experimentation
- Designed experiments related to lunar far side exploration using telerobotics

PROFESSIONAL TRAINING

Designing Better Courses: Blending the Best of Pre- and Post-Pandemic Pedagogy
Harvard University, Online, July 2021
How to design and structure courses to combine the best features of a pre- and post-pandemic learning and improve the class experience for students and instructors.

Becoming an Inclusive Leader
University of Colorado, Boulder, Online, March - April 2021
Provides supervisors, managers, leaders and aspiring leaders at CU Boulder with the knowledge and skills to lead their teams to be more inclusive and equitable, as well as the ability to create a sense of belonging among team members.

Using Cidi Labs Design Tools to Customize Look and Feel of Canvas Courses
University of Colorado, Boulder, Online, April 2019

R Programming Certificate, Johns Hopkins University,
Certificate program offered through Coursera including understanding critical programming language concepts, configuring statistical programming software, making use of R loop functions and debugging tools, and collecting detailed information using R profiler.

The Data Scientists Toolbox, Johns Hopkins University,
Certificate program offered through Coursera including how to set up R, R-Studio, Github and other useful tools, understand the data, problems, and tools that data analysts use, explain essential study design concepts and create a Github repository.

UNIVERSITY SERVICE

Symposium Co-Organizer
Back to the Future Summer Teaching Symposium, August 2021

WENDY L. MARTIN

Symposium Co-Organizer

Online Pedagogy Winter Symposium, January 2021

Hiring Committee Lead

Led hiring committee for successful hiring of Undergraduate Program Director, 2021

Symposium Co-Organizer

What's Your Plan? A Symposium on Education for Fall 2020, July 2020

Online Education Committee for the College of Engineering and Applied Science

COVID-19 Return to Campus Preparation

Engineering Management Program Service:

- DEI Committee, 2021 - 2023
- Undergraduate Committee, 2020 – 2023

COMMUNITY SERVICE

Boltz Middle School

Volunteer, Math Mates Friday, 2018-2019

LANGUAGES

English: Native Language

Spanish: Intermediate Listener, Novice Speaker, Intermediate Reading and Writing

COMPUTER SKILLS

Programming: R

Applications: JMP, Minitab, SPSS, Tableau, Adobe, Microsoft