

# 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

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

## EDUCATION

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

## TEACHING EXPERIENCE

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<b>EMEN-MGMT 4400</b> <b>Quality Management</b>	2017 – 2024
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.	
<b>EMEN 5005</b> <b>Introduction to Applied Statistics</b>	2020 – 2024
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.	

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- 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 - 24  
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 - 24  
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**                                      2022-24  
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 - 24  
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

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software. Students perform measurement systems analysis for potential, short-term and long-term statistical control and capability. Additionally, students learn how to assess a discrete measurement and perform analyses for internal consistency, concordance between assessors, and concordance with a standard. Finally, they learn how to make decisions on measurement systems process improvement. Part of the Master of Science Data Science at the University of Colorado, Boulder.

**EMEA 5006**                      **Defining, Describing, and Visualizing Data**                      2023 - 24

Massively Open Online Course on Coursera platform, part of The Data Driven Manager and Master of Engineering in Engineering Management program. Students learn how to ask the right questions but also answer them using data-based methods. Students learn how to classify data, work with data in RStudio and the ROIStat app, describe and visualize data, and answer probabilistic questions with probability distributions.

EMEA 5007 Data Acquisition, Risk and Estimation 2023 - 24

Massively Open Online Course on Coursera platform, part of The Data Driven Manager and Master of Engineering in Engineering Management program. At the end of the course, students will be able to plan for accurate and precise data generation, then use that data for the purpose of estimation and risk reduction related to capital investments. Students learn how to create a plan to answer business and engineering questions. Students learn how to calculate effect size, power and sample size to reduce risk in decision making. They also learn how to distinguish between best- and worst-case scenarios given point and interval estimates.

**EMEA 5008** **Data Driven Decision Making** 2023 - 24

Massively Open Online Course on Coursera platform, part of The Data Driven Manager and Master of Engineering in Engineering Management program. Through this class, students will be able to perform one sample tests for comparison to historical data. Students learn how to determine statistically significant relationships between two variables. Students perform two sample tests for both independent and dependent data. They also learn how to analyze data with more than two groups using the Analysis of Variance.

**EMEN 5042**                      **Quality Management**                      2023 - 24

This graduate-level course focuses on the principles and practices of quality management in modern organizations. Students develop an understanding of the theories, methodologies, and tools used to achieve and maintain high levels of quality in products and services. The course covers topics such as Total Quality Management, Six Sigma, Lean Management, ISO 9001, and Continuous Improvement. Throughout the course, students learn how to design and implement quality management systems, conduct process improvement initiatives, measure, and analyze performance data, and lead organizational change.

EMEN 4830/5830 Data Analytics and Visualization 2024

Data Analytics and Visualization is a comprehensive course designed to prepare engineers, scientists and managers to master the art and science of data interpretation and storytelling. Students will gain the essential skills needed to effectively analyze, visualize, and communicate complex data both clearly and impactfully. Students will create impactful

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

## PUBLICATIONS

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### *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

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**Conversations on Generative AI**, “[Prompt Strategies in Engineering Education](#)”, CU Engineering Academics, March 2024

**Masterclass**, “Control Estadístico de Procesos”, Universidad de Las Américas – Ecuador, March 2024

**Contributed work**, “[Using ChatGPT Data Analyst for Learner Feedback](#)”, course module for University of Colorado, Boulder, “AI in Course Design”.

**Panel Member**, “Women Leaders in Engineering: A Panel Discussion with CU Boulder's Engineering Management Faculty”, January 2024

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

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**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

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**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

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- 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

- 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

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## **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**

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### **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.
- 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

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- 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 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

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- 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

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**Deming Strategies for Sustainable Success: Innovate, Streamline, Lead**  
The Deming Institute, Columbus, Ohio - October 2024 (Scholarship recipient)  
2-day seminar for improving organizational systems, understanding variation, challenging assumptions and the psychology of management.

**Storytelling with Data Mini-Workshop – Explore and Explain**  
Storytelling with Data, Online June 2024  
Using visual analytics to uncover and explain insights.

**Online Teaching Academy**  
University of Colorado, Boulder, Online, January - March 2024  
Prepares instructors to develop and teach an online, remote, or hybrid course.

**Teaching International Students Micro-credential**  
University of Colorado, Boulder, Online, February - April 2024



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High-impact course design and instructional practices that leverage the linguistic and cultural assets international students bring to the U.S. classroom.

## **Inclusive Syllabus Design**

University of Colorado, Boulder – Center for Teaching and Learning – October 2024

Guides participants through the process of developing syllabi that are engaging and responsive to the needs and interests of students.

## **Gathering Mid-term Student Feedback**

University of Colorado, Boulder – Center for Teaching and Learning – October 2024

Participants will learn the basics on what, why, and how to gather and reflect on mid-term student feedback.

## **Active Learning Strategies**

University of Colorado, Boulder – Center for Teaching and Learning - March 2024

Actively engage students in the process of learning.

## **What Inclusive Instructors are Doing**

University of Colorado, Boulder – Center for Teaching and Learning - November 2023

Defines and introduces inclusion and research-based practices implemented in today's college courses.

## **Working Through Microaggressions**

University of Colorado, Boulder – Center for Teaching and Learning - September 2023

Define the evolving conceptions of micro-aggressions, how they emerge, and ways to confront/address micro-aggressions and micro-aggressors.

## **Data Visualization with Tableau Specialization**

University of California, Davis with Coursera – March 2023

## **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.

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UNIVERSITY SERVICE

Academic Technology Advisory Group

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Representative for the College of Engineering and Applied Science, 2023-2024

## **ASEE Rocky Mountain Section**

Session moderator and abstract reviewer, May 2024

## **Symposium Co-Organizer**

Back to the Future Summer Teaching Symposium, August 2021

## **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 – 2024
- Merit Review Committee, 2024

## **COMMUNITY SERVICE**

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### **Boltz Middle School**

Volunteer, Math Mates Friday, 2018-2019

## **LANGUAGES**

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**English:** Native Language

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

## **COMPUTER SKILLS**

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**Programming:** R

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