

## Daniel Godrick

303-492-4055

### Professional Experience

2014-Present University of Colorado, Boulder Boulder, CO

Summer 2019 - Present **Teaching Assistant Professor, Integrated Design Engineering (IDE) Program**

#### **Classes Taught: Statics, Invention and Innovation, First Year Engineering Projects, Engineering Tools and Analysis (Engineering Mathematics)**

GEEN 3400: Developed and revised curriculum for an upper division, project-based class (GEEN 3400 Invention and Innovation). This class furthered student skills and knowledge in building hands-on projects. Students were introduced to the business, legal and customer reaction aspects of product design. Ethical considerations were explored, and business plans were produced.

Developed metrics to track student success for the IDE program self-study during ABET accreditation. Discussed course and student outcomes during review interview.

GEEN 2010 (Formerly GEEN 3830): Developed and revised curriculum for an Engineering Mathematics class. This class showed first-year college students how to apply mathematical principles to solve real-world engineering applications. Significantly revised the course structure to better match current engineering project course offerings and away from formats more typical of math courses. Designed and implemented new robotics tools for use in new laboratories in class. Participated in research surrounding class.

Led the expansion of this course to 6 sections. Recruited and trained faculty to teach other sections of this course. Managed teaching team of 2 professors and 12 TAs to ensure that the goals of the course were accomplished.

GEEN 2851: Developed and revised curriculum for Introduction to Statics. Developed curriculum to maximize hands-on activities and projects in both in-person and remote environments. Incorporated examples from professional experience and resources. Revised the semester project to account for both remote and in-person learning environments.

GEEN 1400: Introduced students to the principles of engineering and user-centered design thinking through hands-on, project-based learning. Guided students as they created a novel product that included principles from several engineering fields (mechanical, electrical, and computer science).

2-week Summer Bridge: Led program for first year college students in the Gold Shirt program. Developed new curriculum, lectures, and activities to enable a remote version of this bridge program. Developed new curriculum, lectures, and activities to return to in-person learning. Students were able to complete projects and overwhelmingly enjoyed their experience.

Created a library of 15+ online videos to guide students during a mid-semester switch to online learning during the COVID-19 pandemic. These libraries were made open source and utilized by other faculty to help students during this time. Developed and tested online resources so that students could continue building projects in the remote environment. The videos in the library have over 48k views.

All classes consistently scored highly during student feedback surveys and FCQs.

Actively mentored >10 students per year 2022-2024.

**Recipient for the 2023 Charles A Hutchinson Memorial Teaching Award.**

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Course	Years Taught (students enrolled)
GEEN 1400 – Engineering Projects	F2015(30), F2016(30), F2017(31), F2018(31), F2019(31), S2020(60), S2021(30), S2022(31), S2025(32)
GEEN 2010 – Engineering Tools and Analysis (Also known as GEEN 3280)	F 2019 (105), F2020(38), S2021(12), F2021(16), F2022(162), F2023(51), F2024(50)
GEEN 2851 – Engineering Statics	F2020(42), F2021(33), F2022(39), F2023(50), F2024(35)
GEEN 3400 – Invention and Innovation	F2021(29), S2022(17), S2023(23,16), S2024 (24,20), S 2025(30)
MCEN 3208 – Measurements Lab	Summer 2015(20)
Goldshirt Summer Bridge	Summer 2019, Summer 2020 (50), 2021(35), 2022(50)

### Service

Served on both the Math in Engineering committee and the Math Instruction Pedagogy Committee. Worked with Campus leadership, to not only determine the root causes of student struggles in the math sequence at CU Boulder, but also to develop solutions to issues. Developed solutions with both the College of Arts and Sciences and Engineering professors and leadership (Spring 2024). Asked for continued input during Fall 2024 and Spring 2025.

Broadening Opportunity through Leadership and Diversity (BOLD) strategic working group. Chosen to help the BOLD center team revisit their Vision and Mission (Spring 2023).

Contribution to ABET self-study report for the Integrated Design Engineering (IDE) program via outcomes assessment from GEEN 3400, which was relied upon heavily for providing evidence during the ABET review process. A review of the course showed that the course assignments provided evidence for the outcomes, and sub-outcomes of ABET criteria 1-5. The outcomes were sorted for IDE students, and whether they did not meet, met or exceeded goals. This information was processed for every section, for every semester the course was taught during the ABET review time window. The data was summarized so that the trends over time could be seen. The time commitment to collect, process and synthesize this data was >>10 hrs/week with some weeks requiring >20 hours for the Spring semester 2023.

Developed personal statement of Vision and Mission of Integrated Design Engineering Program, and active contributor in strategy discussions (2023-2024).

Represented Integrated Design Engineering Program at the UEC meetings (Fall 2024)

Led the Integrated Design Engineering Program Professional Advisory board meeting (2023)

Led Student Advisory board meetings.

Led focus groups for end of semester feedback for 2+ courses per semester (2019-2024).

Attended and led Integrated Design Engineering Program outreach events to answer questions about the program for prospective, First Year, and open-option students.

Organized, setup, and attended Integrated Design Engineering Program community outreach events that fostered community by discussing cultural relevant topics while providing a bit of food related to the topics. (2021-2024)

Wrote approximately 10+ letters of recommendation per year for students who successfully secured employment, went to graduate school, studied abroad, or received scholarships (2020-2024).

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Represented Integrated Design Engineering Program at bi-weekly Goldshirt Advisory team meetings (2020-2023).

Peer mentor for new professors teaching GEEN 1400 and GEEN 2010.

### **Professional Development**

Attendee American Society for Engineering Education (ASEE) Rocky Mountain Section Conference, May 2024.

Presenter, attendee, and nominated for the Teaching Award at the of American Society for Engineering Education (ASEE) Rocky Mountain Section Conference, May 2023.

2021 ASEE First Year Engineering Experience Conference Attendee

### **Funding and Projects**

2018-2019 Led the team that rethought, redesigned, and remodeled the lab plazas in the ITLL (~\$300k budget). Organized the team. Developed full scale prototypes. Secured bids, and guided staff through the implementation of the upstairs lab plaza. In 2019, I guided the team through the remodel of the downstairs lab plaza in the ITLL.

2018 Authored EEF major Data Acquisition proposal. Awarded \$90k

2016 Authored EEF major Oscilloscope upgrade proposal. Awarded \$101k

2014- 2018 Authored 5 Engineering Excellence Fund (EEF) Mini grants. Over \$18k awarded

2014-2018 Co-Authored more than 15 EEF major and mini proposals that were awarded >\$150k

2014-2019      **Product Design and Instrumentation Engineer (Integrated Teaching and Learning Program) and Instructor**

#### **Classes Taught: First Year Engineering Projects, Measurements Lab I/II,**

Developed curriculum for 5+ workshops that utilized the Arduino microcontroller to teach engineering systems to students. Over 1,000 non-unique students took workshops each academic year.

Created and improved hands-on experiments and labs by soliciting student feedback and working directly with engineering professors. Topics included circuits, system dynamics, robotics, physics, and mathematics.

Guided students through the rapid iteration design process for their projects classes. Over 1,000 non-unique students per year utilized my open office hours for help on topics ranging from mechanical design to electrical circuits to marketing.

Responsible for maintaining inventory of data acquisition equipment and sensors. Instructed both professors and students on how to use the equipment and design testing procedures.

Led meetings that developed ideas for new laboratory equipment and developed yearly equipment budgets with the ITL directors. Wrote and edited several successful proposals, including over \$100k for new electronic and manufacturing equipment.

2004-2015

Engineering Consultant in Private Practice

Washington DC/Boulder, CO

#### **Mechanical Engineer**

Led investigation teams to successfully examine the causes and circumstances surrounding traffic incidents and failures of mechanical devices.

Performed accident reconstruction analysis, which enabled clients to secure awards worth \$100MM+.

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Created and presented written reports and analysis to clients. Managed graphics professionals to create 3-dimensional animations.

Performed full scale vehicle dynamics testing. Experience includes: Full Scale Rollover Crash Tests, Trailer Sway Analysis, Vehicle At-limit Performance Dynamic Testing, and Uneven Rear Braking Analysis.

“Data Acquisition Guy” for Indy Pro Series racing team. Setup computers for analysis of telemetric data and shock systems. Downloaded and analyzed real time lap data.

Created models for and performed the validation of vehicles in the three-dimensional Vehicle Dynamics Analysis, Non-Linear (VDANL) computer program.

2004

BMW Group

Munich, Germany

### Post Graduate Internship

Performed research utilizing the National Automotive Sampling System (NASS) and the Fatal Accident Reporting System (FARS) to determine the nature of accidents on United States roadways.

Assisted with the vehicle and scene investigations to determine the nature of serious accidents involving BMW automobiles.

Additional research compared rollover accidents as they occur in Europe versus the United States utilizing the NASS, FARS, German In Depth Accident Study (GIDAS), University of Loughborough, and internal BMW databases.

2002-2004

Engineering Consultant in Private Practice

Washington DC

### Mechanical Engineer

Performed accident reconstruction analysis. Analyzed vehicle models using Vehicle Dynamics Analysis, Non-Linear computer program. Developed reports detailing analysis results. Synthesized accident scene and witness evidence.

1999- 2001

Xanga.com

New York, NY

### Product Manager

Guided the creative staff in the creation of the initial designs, developed the first products, and refined the initial strategy.

Established product specifications with management and programming teams and created usability testing metrics to develop quality control processes for new products.

At its peak, Xanga attracted over 20 million users and was ranked a top website by Alexa

1997- 1999

The Parthenon Group

Boston, MA

### Associate Consultant

Led task forces and profit improvement studies to analyze high-importance issues at a variety of companies ranging from a multibillion-dollar publishing company to a small start-up.

1996

Capital One Financial Corporation

Falls Church, VA

### Summer Internship

Created MS Excel model to perform risk analysis on new businesses. Gathered and analyzed data to check feasibility of business ventures.

1995

General Motors

Flint, MI

### Summer Internship

Conducted flow distribution study to reduce environmentally harmful tail pipe emissions. Performed research in flow patterns through exhaust systems and in the development of next generation tailpipe emission sensors.

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### Educational Experience

2012 – 2014 University of Colorado Boulder, CO

**Master of Science in Mechanical Engineering (Design Track with Leadership and Management Certificate)**

GPA: **4.0**

Capstone Project: Designed a novel device to determine flow rates through an automated cell culturing system.

**Inventor on U.S. Utility Patent 10,077,421 B2** entitled MEASURING FLOW RATE, granted September 18, 2018

Design Coursework: Advanced Product Design, Graduate Product Design, Optimal Design, Mechatronics and Robotics, Sustainable Energy Systems, Anatomy and Physiology, and Advanced Mathematical Methods.

Leadership and Management Coursework: Project Management, Quality, Strategy, and Value Creation, Leadership, and Ethical Decision Making

2001-2003 The George Washington University Washington, DC

**Master of Science in Civil Engineering (Transportation Safety and Vehicle Dynamics)**

GPA: **4.0**

Thesis Topic: Examining the circumstances surrounding occupant injury in real world, single vehicle, rollover accidents.

Other published research analyzed vehicle to guardrail compatibility. Created tool for easily accessing National Automotive Sampling System (NASS) cases in HTML format.

1993-1997 Duke University Durham, NC

**Bachelor of Science in Mechanical Engineering**

GPA: **3.9**

Awards: **Mechanical Engineering Faculty Award**, Summa Cum Laude, Phi Beta Kappa, Tau Beta Pi, Pi Tau Sigma, Deans list with Distinction 1993-1997

### Professional Accreditations

**Professional Engineer State of Colorado (License #43249)**

Certified FARO Laser Scanner Operator. Certified Vetronix Crash Data Retrieval (CDR) Operator.

### Skills

Technical Software: LabVIEW, SOLIDWORKS, AutoCAD, MATLAB, SAS, Unix, LS-Dyna, Java, C, Processing, Arduino, Latex, HTML, FARO Cloud, VDANL, HVE, EDSMAC, EDCRASH, MSMAC, CURA, CorelDRAW

Productivity Software: Jira, Confluence, MS Office, MS PowerPoint, MS Word, Advanced MS Excel, MS Access

Hardware: Epilog Laser Cutter, OBJET 3d Printer, LulzBot 3d printer, Lulzbot 3d printer, MakerBot 3d printer, FARO Laser Scanner, NI cDAQ, NI myRIO, NI cRIO, NI SBRIO, Top-Con Total Station, Leica Total Station, Instron Tension/Compression, Instron Torsion

### Professional Societies

Member - American Society of Engineering Education

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### Publications

Godrick, Daniel; Bielefeldt, A.; Sharpe, R., "Comparing learning outcomes and student experiences in Engineering Math using virtual and physical robots" American Society for Engineering Education (ASEE) Rocky Mountain Section Conference, May 2023 (Peer)

Bielefeldt, Angela; Godrick, D.; Tisdale, J.; Davis, M., "Approaching math as a tool for engineering: A bridge into college engineering" American Society for Engineering Education (ASEE) Rocky Mountain Section Conference, May 2023 (Peer)

Bielefeldt, Angela; Tsai, Janet; Sullivan, Jackie; Meyers, Beth; Godrick, Daniel, "Minority Status and Belonging: Engineering Math as a Vehicle to Build Community", CoNECD, January 2021 (Peer)

Gilbert, M. G, Godrick, D. A, Klein, R. H, "The Effect of Longitudinal Center of Gravity Position on the Sway Stability of a Small Cargo Trailer" Proceedings of IMECE2008, November 2008. (Peer)

Gilbert, M. G, Godrick, D. A, "Vehicle Dynamic Performance Testing 2002 Volvo S80 T6" SOARCE A Journal for the Society of Accident Reconstructionists, Winter 2008. (Peer)

Wilson, L.A., Gilbert, M., Godrick, D., "Reconstruction and Analysis of Steering-induced, On-road, Un-tripped SUV Rollover Tests (Part 2)" Collision: The International Compendium for Crash Research, Volume 2, Issue 2 Winter 2007. (Magazine)

Wilson, L.A., Gilbert, M., Godrick, D., "Reconstruction and Analysis of Steering-induced, On-road, Un-tripped SUV Rollover Tests" Collision: The International Compendium for Crash Research, Volume 2, Issue 1 Spring 2007. (Magazine)

Wilson, L., D. Godrick and S. Kildare, "Vehicle Dynamic Characteristics of SUVs in On-Road, Un-tripped Rollover Accidents", Collision: The International Compendium for Crash Research, Volume1, Issue 2, Fall 2006. (Magazine)

Digges, K., Bedewi, P., Burel, J., Godrick, D. et al., "Crash Simulations to Understand Injury Mechanisms in Maneuver Induced Rollover Crashes," SAE Technical Paper 2004-01-0330, 2004. (Peer)

Eskandarian, A., Bahouth, G., Digges, K., Godrick, D., Bronstad, M. (2004) "Improving the Compatibility of Vehicles and Roadside Safety Hardware" Transportation Research Record (NCHRP Document 61), February 2004. (Peer)

Bedewi, P., Godrick, D, Digges, K., and Bahouth, G., "An Investigation of Occupant Injury in Rollover: NASS-CDS Analysis Of Injury Severity And Source By Rollover Attributes", Paper 491, Proceedings of the ESV Conference, May, 2003. (Peer)