

# DR. LAUREN A. COOPER

WCU-CU Boulder [Mechanical Engineering Partnership Program](#)  
Teaching Associate Professor & Associate Director of Data Analytics and Assessment  
[cooperla@colorado.edu](mailto:cooperla@colorado.edu)

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## EDUCATIONAL PREPARATION

### **Ph.D. Mechanical Engineering**

University of Colorado, Boulder  
Primary Advisor: Dr. Daria Kotys-Schwartz

Graduated May 2014  
GPA 3.71

Research focus: To explore 1) best practices related to project-based learning; 2) how project-based learning impacts student motivation; 3) how to integrate the context of service into project-based learning.

### **M.S. Civil Engineering**

University of Colorado, Boulder

Graduated December 2008  
GPA 3.68

Research focus: Developed easy-to-use residential-scale energy auditing software and educational materials to train novice energy auditors. Created curriculum for a bio-inspired design for first-year engineering students.

### **B.S. Engineering, Mechanical Specialty**

Colorado School of Mines

Minor in Humanitarian Engineering

Recipient of the Maryanna Bell Kafadar Award for Excellence in the Humanities

Graduated May 2006  
GPA 3.25

## TEACHING EXPERIENCE

### **University of Colorado Boulder, Boulder CO**

Teaching Associate Professor, Department of Mechanical Engineering  
Associate Director of Data Analytics & Assessment  
WCU-CU Boulder Engineering Partnership Program  
(January 2022 – current position)

#### **Courses Taught:**

- MCEN 3017: Circuits and Electronics (Fall 2022, Fall 2023)
- MCEN 3047: Data Analysis and Experimental Methods (Spring 2022, Spring 2023)
- MCEN 4045: ME Design Project 1 (Fall 2022, Fall 2023)
- MCEN 4085: ME Design Project 2 (Spring 2022, Spring 2023)
- ENGR 131: Introduction to Engineering Design (Spring 2023)

### **California Polytechnic State University, San Luis Obispo, CA**

Assistant Professor, Department of Mechanical Engineering  
(September 2018 – December 2021)

Lecturer, Department of Mechanical Engineering (January 2018 – June 2018)

**Courses Taught:**

- ME 128: Introduction to Mechanical Engineering I
- ME 234: Philosophy of Design
- ME 328: Design for Strength and Stiffness
- ME 329: Mechanical Systems Design
- ME 403: Access by Design: Introduction to Rehabilitation Engineering
- ME 428: Senior Design Project 1

**Colorado School of Mines, Golden CO**

Adjunct Faculty, Division of Engineering, Design, and Society (2016 – 2017)

Program Coordinator, Humanitarian Engineering (2016 – 2017)

Teaching Assistant Professor, Department of Civil and Environmental Engineering (2011-2014)

**Courses Taught:**

- EGGN 491: Capstone Design I
- EGGN 492: Capstone Design II
- CEEN 311: Mechanics of Materials
- EDNS 301: Human-Centered Problem Definition
- EDNS 401: Projects for People
- HNRS 405: McBride Practicum
- EPIC 151: Cornerstone Design 1
- EPIC 152: Cornerstone Design II
- CSM 101: Freshman Success Seminar

**University of Colorado, Boulder CO**

Adjunct Instructor, Integrated Teaching and Learning Program and the Department of Mechanical Engineering (2009 – 2011)

**Courses Taught:**

- MCEN 3047: Data Analysis and Experimental Methods
- GEEN 1400: Engineering Projects

**University of Colorado, Boulder CO**

K-12 “TEAMS” Engineering Outreach Fellow (2006 – 2009)

**LEADERSHIP AND SERVICE (for WCU-CU Boulder Partnership Program)**

- **Assistant Director for Data Analytics and Program Assessment**  
(Fall 2023 – current role)  
*Responsible for creating and implementing a plan to collect, analyze, summarize, and discuss data to realize positive gains in our program’s mission, vision, program educational objectives, student outcomes, and strategic goals.*

- **Assistant Director of Mechanical Engineering Program**  
 (Spring 2022 – Fall 2023)  
*Engaged with CU Boulder Mechanical Engineering Department on main campus for curriculum updates and was active in main campus curriculum meetings. Implemented updates to the partnership program curriculum and program as a whole.*
- **ABET Accreditation**  
 (Spring 2022 – Fall 2023)  
*Led our partnership program through its initial ABET accreditation. This included writing self-studies for both our B.S. in Mechanical Engineering and B.S. in Computer Science, compiling extensive online materials for review by our ABET program evaluators, and coordinating the details of our October 2023 site visit.*
- **Rady Engineering Academy, Program Director**  
 (Spring 2022 – current role)  
*Created a six-week engineering academy for middle school-aged students in the Gunnison Valley. The driving purpose of the program is to inspire, educate, and empower students through hands-on, inquiry- and project- based learning. Responsible for all aspects of this program – from initial idea generation, development of marketing materials, outreach to local students, families, and teachers, and recruitment of program participants.*
- **Mountaineers Without Borders, Faculty Advisor**  
 (Spring 2021 – current role)  
*Worked with students to create “Mountaineers Without Borders (MSB)”, an interdisciplinary student-led club at Western Colorado University. MWB fosters a mix of local and global projects to bring engineered and designed solutions to community problems. To date, MWB has completed two local projects and one large-scale international project in Colombia (May 2023).*

## FUNDED GRANTS

- “Strengthening Rural Innovation and Entrepreneurship.” \$28,174 funded externally by VentureWell (2023). Role: PI.
- “Integrating Social Justice Projects in Thermal System and Mechanical Design Courses.” \$9,000 funded internally through Cal Poly College of Engineering’s Summer Undergraduate Research Program (2021). Role: Co-PI.
- “Transforming Engineering Pedagogy and Culture.” \$39,923 funded through CSU’s STEM-NET Faculty Education SEED Grant Program (2020/2021). Role: Co-PI.
- “Cal Poly Maker Institute: Maker Tools in the K-12 Classroom.” \$185,785 funded through a private donor (2019 – current project). Role: Co-PI.
- “Cultivating Empathy and Mental Health in Engineering Students.” \$3000 funded internally by the Center for Expressive Technologies Seed Grants Program (2019). Role: Co-PI.
- “Projects to Help People with Mobility Losses: Introduction to Rehabilitation Engineering.” \$1200 funded internally by Cal Poly College of Engineering’s Connect Program (2019). Role: PI.

## AWARDS

### **STEM-NET Faculty Fellows Grant Award (2020 – 2021)**

- Awarded one-year faculty fellowship by the California State University to support and encourage the development of new STEM research and the submission of external grants.

### **Northrop Grumman Excellence in Teaching Early Career Award (2020)**

- Received award for demonstrated excellence in teaching and commitment to student success.

### **Center for Innovation and Entrepreneurship (CIE) Faculty Fellow (2019 – 2021)**

- Awarded three-year faculty fellowship in Cal Poly's Center for Innovation and Entrepreneurship.
- Objective to connect students with pathways in entrepreneurship and innovation.

## PUBLICATIONS

1. **Cooper, L.**, and J. Mott (2021). Implementing Social Justice Projects in Thermal System and Mechanical Design Courses. Proceedings of the 2021 American Society for Engineering Education Virtual Annual Conference.
2. De Souza, N., Ochotonera, M., Self, B., and **L. Cooper** (2021). Sudden Shift to Online Learning: COVID-19's Impact on Engineering Student Experiences. Proceedings of the 2021 American Society for Engineering Education Virtual Annual Conference.
3. **Cooper, L.**, A. Johnston, E. Hubbard, and B. Self (2020). Development of Empathy in a Rehabilitation Engineering Course. Proceedings of the 2020 American Society for Engineering Education Annual Conference.
4. Johnson-Glauch, N., **L. Cooper**, and T. Harding (2020). Goal Setting as a Means of Improved Mental Health Outcomes for Materials and Mechanical Engineering Students. Proceedings of the 2020 American Society for Engineering Education Annual Conference.
5. Schuster, P., **L. Cooper**, E. Elghandour, E. Rossman, and S. Harding. (2020). Senior Capstone Team Formation Based on Project Interest: Team Selection by Students Compared to Team Selection by Instructors. Proceedings of the 2020 American Society for Engineering Education Annual Conference.
6. Schuster, P., B. Self, E. Elghandour, and **L. Cooper** (2020). A Hybrid Approach to Team-forming for Capstone Design Projects. Proceedings of the 2020 American Society for Engineering Education Annual Conference.
7. **Cooper, L.** (2017). Lauren Cooper: Human-Centered Design for Emotional Accessibility.[Video file]. Retrieved from: <https://www.youtube.com/watch?v=5iooL4ij5Cc>
8. **Cooper, L.** (2014). Designing the Design Experience: Identifying Factors of Student Motivation in Project-based Learning and Project-Based Service-learning. Mechanical Engineering Graduate Theses & Dissertations. Retrieved from: [http://scholar.colorado.edu/mcen\\_gradetds/86](http://scholar.colorado.edu/mcen_gradetds/86)

9. **Cooper, L.**, D. Kotys-Schwartz, and D. Reamon. (2012). Using Random Forests to Identify Factors of Student Motivation in a Project-Based Learning Course. Proceedings of the ASME 2012 International Mechanical Engineering Congress and Exposition.
10. **Cooper, L.**, M. Zarske, D. Kotys-Schwartz, and D. Reamon. (2012). One Day's Pay: Educating K-16 Engineers to Design Affordable Innovations. Proceedings of the 2012 National Science Foundation Engineering Education Awardees Conference.
11. **Rockenbaugh (Cooper), L.**, D. Kotys-Schwartz, and D. Reamon. (2011). Project-Based Service-Learning and Student Motivation. Proceedings of the 2011 American Society for Engineering Education Annual Conference.
12. **Rockenbaugh (Cooper), L.**, M. Zarske, D. Kotys-Schwartz, and D. Reamon. (2011). Engineering for American Communities: Engaging Engineering Students in Multidisciplinary Altruistic Engineering Design Projects. Proceedings of the 2011 American Society for Engineering Education Annual Conference.

## **GRADUATE STUDENTS**

Committee Chair for Cal Poly Mechanical Engineering Graduate Students:

- Project title: Dual Crystal Backlighter Imager: Development of Five Degree of Freedom Precision Stages
- Student: Nicholas Nguyen
- Graduated May 2020
  
- Project title: Hybrid III 95th Male Finite Element Model Neck Alteration
- Student: Eric Day
- Graduated December 2019

## **PUBLIC SPEAKING**

- Speaker at American Society for Engineering Education (Pacific Southwest) webinar series, Fall 2020.
- Speaker at "Inclusion Starts with Me Teach In," hosted by Cal Poly's College of Liberal Arts, February 2020.
- Panelist at "Women in Engineering Night," hosted by Cal Poly's Society of Women in Engineering, February 2019.
- Speaker at "Engineering Perspectives and Impact Conference," hosted by Cal Poly's chapter of American Society of Mechanical Engineers, May 2019.
- Speaker at "Research Week Lighting Talks," hosted by Cal Poly's Office of Research and Economic Development, October 2019.

## **INDUSTRY EXPERIENCE**

### **International Center for Appropriate and Sustainable Technology, Lakewood CO (2010)**

- Created excel-based energy auditing tool for residential building applications
- Performed energy audits and building energy modeling to recommend energy efficiency measures
- Co-developed training course and video series in energy auditing, energy efficiency, and renewable energy as part of iCAST's workforce development initiative

### **NexGen Energy Partners, Boulder CO (2009)**

- Prepared and submitted grants to secure project funding
- Oversaw site analysis, permitting, materials acquisition, and power purchase agreements
- Created wind energy curriculum for school customers

### **National Wind Technology Center, Golden CO (2006)**

- Developed wind power performance analysis tool in Visual Basic
- Assessed power performance of wind turbines