Melissa Chavez

4th Year Electrical Engineering Undergraduate

Passionate and driven Electrical Engineering student with strong interests in analog circuit design, photonics, electromagnetic computation, circuit prototyping, and PCB development. Skilled at translating theoretical concepts into practical hardware solutions through design, testing, and troubleshooting. I thrive at the intersection of cutting-edge technology and social impact, combining technical expertise with a commitment to equity in STEM education. Through hands on teaching and mentorship at local schools, I work to empower underrepresented and at-risk youth, making complex engineering concepts accessible, inspiring future innovators, and bridging opportunity gaps in my community.

Boulder, Co

(970) 714-4576

mchavez1628@outlook.com

EXPERIENCE

University of Colorado, Boulder— *Undergraduate Researcher*

August 2025 - PRESENT

Contributing to the project *"Effects of High Frequency TEM Waves on High Speed Digital Circuits."* Developed simulation software to model high-frequency wave emissions from PCB traces, supporting analysis of electromagnetic interference in digital systems.

University of Colorado, Boulder— *Learning Assistant*

August 2024 - December 2024

Supported instructors and students in topics including circuit analysis, circuit simulation software, circuit prototyping, and introductory microcontroller programming. Provided one-on-one guidance and group assistance to reinforce concepts and strengthen practical skills.

Justice High School Lafayette, CO — *Math and Physics Tutor*

July 2020 - December 2023

Served as a Learning Assistant in the high school mathematics department and **founded and led a daily introductory physics club** in collaboration with Dr. Anatoliy Glushchenko, creator of *Physics in a Box*. Delivered curriculum through interactive lectures and hands-on experiments, fostering student engagement and interest in STEM.

Justice High School Lafayette, CO— *3D Printing Technician*

July 2024 - Present

Maintained and repaired the school's fleet of 3D printers, performing both mechanical and electrical troubleshooting to ensure reliable functionality and minimize downtime.

Justice High Tutor Excellence Fort Collins, Co— *Mathematics Tutor*

May 2022 - August 2022

Provided individualized instruction in high school mathematics and SAT preparation, tailoring lessons to student needs and improving problem-solving skills and test readiness.

SKILLS

●MATLAB ● Arduino ● STM32 ● C ● C++ ● CAD ● Verilog ●Altium ●Electromagnetic Computation (FDTD) ● Teaching ● Public Speaking ● Team Projects ● Leadership Roles

AWARDS & Associations

FRCC 2024 Student Commencement Speaker

Gave a speech on behalf of students of all three campuses that was cited or featured in various news articles, radio broadcasts, and podcasts.

Graduated Cum Laude from FRCC

Member of National Society of Collegiate Scholars

Member of Quantum Scholars Cohort

Member of Women in Quantum Cohort

Member of TRIO

LANGUAGES

English

Spanish

Related Coursework

Digital Logic ● Embedded Software Engineering ● Circuits as Systems ● Electronics Design Lab ● Application of Embedded

Systems ● Microelectronics ● ●Wireless Systems Design ●PCB Design ●Optical/Electrical Imaging ●Quantum Engineering ●Power Electronics

EDUCATION

Front Range Community College — *Associates of Science with Mathematics Concentration*

August 2021 - December 2023

University of Colorado, Boulder — *Electrical Engineering*

January 2024 - Present

Current student

PROJECTS

FRCC Catapult and Ballista Competitions —

One-time winner and two-time participant in a college-wide catapult and ballista competition. Designed and built a full-scale catapult capable of launching pumpkins and baseballs. Committed to a year-long team project, taking on a leadership role during the second competition.

Sumo Bot Competition —

Collaborated in a team of three to design and build a SumoBot for a class-wide competition, completing the project one week ahead of schedule. The robot featured a standalone controller and integrated three final-project enhancements (two beyond requirements): multicolor LED patterns responsive to user-controlled “moods,” autonomous distance-sensor response, and a custom IR transmission protocol. Utilized **CAD** for design and **MicroPython** for firmware development.

NorCal 40A —

Assembled, soldered, tested, and debugged a NorCal 40A radio transceiver, integrating amplifiers, mixers, oscillators, and filters. Successfully established wireless communication with other transceivers, demonstrating proficiency in RF circuit construction and troubleshooting.

.