Heather Childers

(805) 570-0365
hmchilders@ucdavis.edu

Education

Bachelor of Science in Biological and Agricultural Engineering from University of California, Davis

- Graduated in June 2022
- Minor in Atmospheric Science
- Honors and Awards: College of Engineering Dean's List for Spring Quarter 2020, Certificate of Appreciation from the Department of Biological and Agricultural Engineering.

Skills

Hardware

- 3+ years experience working on mill, lathe, band saw, and drill press.
- 1+ year experience working with a laser cutter, sandblaster, powder coating, and soldering.
- Introductory experience with TIG and oxyacetylene welding, 3D printing, cutting and bending sheet metal.

Software

- Proficient in SolidWorks parts, part drawings, and assemblies.
- Experience with MatLab, AutoCad, FastCAD, Arduino IDE, Rstudio, OrCAD, COMSOL Multi-physics, and ArcGIS.

Work Experience

Engineering Intern, Sikama International Inc.; Santa Barbara, CA — June 2021- Present

- Implement a new electronic work instruction software for company-wide usage.
- Input over 400 instruction manuals and format instruction steps to improve production staff efficiency.

- Teach production staff the intended use of all relevant software features and assist production staff with technical problems.
- Document discrepancies between work instructions and bills of materials.
- Lead progress meetings with upper management staff
- Create SolidWorks parts and assemblies for new and existing machines.
- Clean and organize machine shop area, develop a new organizational system for standard COTS parts and assist in implementing Vendor Managed Inventory.

Student Research Assistant, Department of Electrical and Computer Engineering; University of California, Davis — December 2018- July 2019

- Designed and manufactured parts for research group leaders using machines such as a mill, lathe, band saw, and basic hand tools.
- Updated and created new SolidWorks parts and manufactured parts from part drawings.
- Followed standard operating procedures and documentation protocols for existing research projects

Project Experience

Development of a Solid-State Fermentation Bioreactor for High-Value Protein-Enriched Feed from Almond Hulls; Capstone Senior Design Project — September 2021- June 2022

- Followed experimental protocols for growth medium preparation, inoculation of fungi, collection and filtration of fungal spores, harvesting of fungal biomass, sterilization of tools and materials in an autoclave, compositional analysis, and nitrogen analysis.
- Developed new experimental protocols to scale up 1.5gram batch samples to 100gram batch samples while increasing the protein content to at least 15% and optimizing resource consumption during fermentation.
- Assisted in the design, modeling, and manufacturing of the bioreactor prototype
- Completed required safety training including Autoclave Safety, Hazardous Waste Management and Minimization, Proper Handling of Materials at Biosafety Level 1, Biological Safety Cabinet Training, Fume Hood Training, Lockout/Tagout, and Electrical Safety.
- Worked on a team of four students and two Principle Investigators to produce project deliverables, including quarterly progress reports, Gantt charts, and presentations
- Presented the finished prototype with a poster board showing the project abstract, experimental methods, design criteria, results, and recommendations for future research at the UC Davis College of Engineering Senior Design Showcase 2022

Impact of Air Fresheners on Indoor Air Quality; Air Pollution Course Project — September 2021- December 2021

- Worked on a team of two students designing an experimental protocol to determine the impact of different air fresheners on indoor air quality using a Plantower PMS5003 air quality sensor
- Displayed the particle and mass concentration results of the experiment graphically and analyzed the results in a 10-minute presentation.
- Identified and reported sources of variability and error within our experiment

Design Evaluation of Commercial Grocery Store Display Cases for Thermal Uniformity; Heat Transfer in Biological Materials Course Project — April 2021- June 2021

- Researched the product composition of spinach and used a virtual experiment simulation to find the experimental thermal conductivity of spinach.
- Collaborated with a team of four women to develop stationary and time-dependent COMSOL Multi-physics models for three different "grocery store" designs.
- Evaluated each of the three designs for temperature uniformity of the spinach bags on display and the energy efficiency of the designs.

Simulation and Evaluation of a Pressure Sensor Circuit with Digital Output; Electrical Circuits and Systems Laboratory Report— April 2020- June 2020

- Designed a Wheatstone bridge to simulate the presence of a pressure sensor by varying one resistor and replicated the circuit in OrCAD to output the results
- Designed a differential amplifier to amplify the voltage output of the Wheatstone bridge and a low-pass filter to filter out noise from external frequencies

Engineering Design Alternative Economic Analysis Project; Engineering Economics Course Project— January 2020- March 2020

- Evaluated two design alternatives for a proposal to design, build and install living plant wall systems for walls of commercial buildings by completing a full analysis of the after-tax cash flow using Internal Rate of Return (IRR) and sensitivity analysis
- Developed a summary table where the benefits and costs are divided into gross income, operating expenses, capital expenses, salvage value, before-tax cash flow, depreciation, capital gain, taxable income, tax, and after-tax cash flow for each alternative

Prototype Fabrication and Evaluation of an Algae Photo-bioreactor; Introduction to Biological Systems Engineering Course Project— September 2017- December 2017

- Research existing bioreactor design and conduct a design evaluation using a KT decision matrix.
- Develop a SolidWorks Assembly to model the ideal design.
- Fabricate a prototype based on the specification of the SolidWorks model and collect samples from the bioreactor to measure milligrams/m^3 of algae growth per day.

Extracurricular Activities

Undergraduate Representative, Department of Biological and Agricultural Engineering; University of California, Davis — December 2021- June 2022

- Presented to the Biological and Agricultural Engineering Department Leadership Board regarding extracurricular student involvement, employment opportunities on campus and after graduation, and provided anecdotes about student experiences within the department.
- Listened to student commentary about their involvement in the department and implemented solutions based on student feedback, including providing the senior class with custom Biological and Agricultural Engineering stoles for graduation and creating individual certificates for each graduating student to receive during the department graduation brunch.

Biological and Agricultural Engineering Ambassador — Department of Biological and Agricultural Engineering; University of California, Davis — September 2021- June 2022

- Collaborated with the department's outreach team to work on increasing their social media presence through student Q and A posts, Instagram takeovers, TikToks, and upcoming event information
- Provided one-on-one peer mentoring for incoming freshman and transfer students about getting involved on campus and setting up a manageable course load each quarter

President and Events Coordinator — Society of Biological Engineers at the University of California, Davis — September 2020- June 2022

- Responsible for documenting club purchases for events and placing/receiving orders for marketing materials, including T-shirts, stickers, flyers, etc.
- Organized various events, including Barbecues, bowling nights, study sessions, game nights, group bike rides, industry speakers, and collaborations with the Graduate Student Association and the Internship and Career Center, and spearheaded the transition from virtual to in-person events.

- Registered the club with all officers and current members to the university, attended informational sessions for club leaders, and filled out necessary forms for participation in club outreach events.

Vice President and Secretary — GreekBeats at University of California, Davis — September 2018-March 2020 (6 hours per week)

- Documented weekly meeting minutes and group attendance, led solo auditions and assisted in performance schedule.
- Performed at registered student organization outreach events and sorority and fraternity philanthropy events.

Member and Sustainability Chair — Delta Delta Delta at University of California, Davis — September 2018-March 2020

- Attended weekly member meetings, weekly officer meetings, study hours, alum events, and three outside philanthropy events per quarter
- Participated in one Tri Delta philanthropy event's outreach, organization, and clean-up per quarter.
- Applied for grants to purchase sustainable materials for all philanthropy events to reduce waste and increase profits sent to St. Jude Children's Research Hospital

Plant Sales Volunteer; University of California, Davis Arboretum — September 2018- June 2019

- Correctly identified plants for correct pricing, promptly totaled bills and answered member questions about membership, coupons, events, and plant care.

Recruitment Counselor (Pi Rho Chi) — Office of Sorority and Fraternity Life at the University of California, Davis — September 2018

- Attended two weeks of training and read the Davis Collegiate Panhellenic Recruitment handbook before mentoring a group of eight girls through the week-long process of Panhellenic recruitment.
- Upheld the rules of recruitment at a stationed house and recorded fines incurred by the chapter
- Created a confidential space for daily one-on-one meetings where each potential new member could voice questions and concerns about the recruitment process and sorority life