Jacob B. Chugg

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EDUCATION

Brigham Young University – Ira A. Fulton College of Engineering Provo, UT

Bachelor of Science in Mechanical Engineering, Expected Apr 2028

- GPA 3.69 / 4.00 | Honors: 4 merit scholarships totaling full tuition + stipend, incl. Charles R. Bluemel Endowed | Member, ASME; Leadership Certificate Program, Weidman Center

EXPERIENCE

Brigham Young University – Mechanical Engineering Department Provo, UT

Research Assistant – Combustion Chamber Apr 2026 – Present

- Designed a parametric combustion box model that adjusts to refractory-material thickness from heat-transfer calculations, iterating from rectangular to a cylindrical geometry now slated for manufacturing in collaboration with Valar Atomics
- Created toleranced part drawings and BOM/exploded views for a 14-part assembly comprising 3 subassemblies, coordinating interface dimensions with the heat-exchanger team

Brigham Young University – Math Department Provo, UT

Calculus Teaching Assistant Aug 2025 – Present

- Instruct hundreds of students in Calculus I and II through individual tutoring and exam review sessions

Provo Missionary Training Center (MTC) Provo, UT

Tagalog Language Instructor Jul 2024 – Jan 2025

- Taught 4 districts (9 – 12 missionaries each) through full-immersion Tagalog instruction, building comprehension and lesson-teaching fluency within 6 – 12 weeks

PROJECTS

MOI-Optimized Putter Design & Manufacturing Provo, UT

Personal Project Jun 2026 – Present

- Iterating through 3 mallet-style putter head designs in SolidWorks, using mass-property and MOI studies to align the shaft axis through the center of mass for a near-zero-torque design
- Completed toleranced part drawings and an exploded assembly with BOM; now manually machining removable brass weights for swing-weight tuning and preparing the final head for CNC machining

Pipsqueak Engine Design & Manufacturing Provo, UT

Brigham Young University Apr 2026 – Aug 2026

- Modeled, machined, and assembled a functional pipsqueak engine from SolidWorks drawings while applying tolerancing, fits, machining, and DFM principles

Autonomous Sensor-Based Robot Provo, UT

Brigham Young University May 2026 – Jun 2026

- Integrated a battery-powered Arduino robot with photodiode-based steering and servo tilt-tracking, sonar-triggered collision stops, and DC motor control; verified autonomous operation in a graded demonstration

Centrifugal Water Pump Design Competition Salt Lake City, UT

University of Utah Aug 2022 – Dec 2022

- Led a 4-person team to design and 3D print a centrifugal water pump; achieved highest flow rate among 12+ teams

SKILLS

- **CAD/Design:** SolidWorks (CSWA Certified), parametric modeling | **Manufacturing:** Manual machining, tolerancing, sand casting, MIG welding, DFM | **Programming/Tools:** Python, C/C++, Arduino, Excel | **Languages:** Fluent in Tagalog

LEADERSHIP & SERVICE

The Church of Jesus Christ of Latter-day Saints Legazpi, Philippines

Volunteer Missionary | Traveling Assistant Jun 2022 – Jun 2024

- Directly coached zone and district leaders, equipping them to improve teaching and goal-setting across 200+ missionaries

AWARDS, ACTIVITIES & INTERESTS

- *Koch Family Foundation Scholarship*, University of Utah (2021–2022) | *Walk-On Cornerback*, Utah Football (2021) | *Eagle Scout* (2019) | Interests: Golf, Weightlifting