

Omar Demiry

MECHANICAL & ELECTRICAL ENGINEERING

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EDUCATION

University of Washington Bothell

Expected 2028

B.S. Mechanical Engineering and B.S. Electrical Engineering, dual major

Coursework: Statics, Dynamics, Fluid Mechanics, Heat Transfer, Thermal Fluids Lab, Materials Science, Circuits, Electronics I & II, Machining

Cascadia College — A.A. Interdisciplinary Studies, earned concurrently with high school

2020 – 2022

SKILLS

CAD & Simulation: SolidWorks parts, assemblies, and Simulation (FEA) · 3D printing and design for additive manufacturing · Granta CES

Test & Measurement: Oscilloscope, DMM, function generator · uncertainty analysis · tensile, hardness, Charpy testing

Machining: Lathe turning · vertical milling · drill press and tapping · parts to engineering drawings

Electrical: LTspice and PSpice · MOSFET and BJT amplifier design · diode and Zener circuits · Arduino

Programming: Python (NumPy, Matplotlib) · C++ · C#

Certification: AWS Certified Cloud Practitioner (2023)

ENGINEERING PROJECTS

Modular Model Display Stand — SolidWorks, FEA, Additive Manufacturing

B ME 315 · Mar 2026

- Benchmarked a commercial stand in SolidWorks Simulation and found its joint carried the entire load through a single gear tooth; redesigned it as a bolted friction joint with continuous rotation.
- Sole designer and analyst of the final mechanism on a three-person team; flagged inconsistent boundary conditions between FEA studies rather than report unreliable safety factors.
- Printed at 100% infill to match simulation assumptions and corrected fits over three print rounds; costed at \$7.79 versus \$7.99–\$9.99 retail.

Balsa Truss Bridge — Design Competition

ENGR 214 Statics · Mar 2024

- Analyzed all 49 members by method of joints and sections, cross-checked against truss software, for a 36 in span rated at 25 lbf.
- Carried about 100 lbf, four times the design load, placing 2nd in class on load-to-weight ratio on a three-person project done solo.
- Traced failure to unanalyzed transverse members between the truss faces while the analyzed trusses held.

Egg Drop Impact Structure

Dynamics · 2025

- Designed a no-parachute straw impact structure and analyzed fall time, impact velocity, and rotational dynamics for two landing cases by hand; the egg survived and landed on target, the one successful design in the group.

Machined Parts

B ME 345 · Spring 2026

- Turned a 12L14 steel plumb bob to drawing (conical point, hex, 3/8-16 tapped hole); milled a 1-2-3 block with a level vial and pencil holder.

Fluid Mechanics Analyses

BME 332 · 2026

- Derived pressure and flow fields from Bernoulli, continuity, and stream functions; implemented potential flow around a cylinder in Python and validated it against stagnation points and $C_p = 1 - 4\sin^2\theta$.

ELECTRICAL & LABORATORY WORK

Electronics Laboratory Sequence

B EE 200, 331, 332 · 2025 – 2026

- Designed and built a common-source MOSFET amplifier to $I_D = 2$ mA and $A_v = -20$ V/V; characterized 2N7000 and 2N3904 I-V behavior.
- Designed a diode and Zener limiter clipping a $-3/+7$ V square wave to $-2.1/+5.4$ V, verified by calculation, LTspice, and oscilloscope.

Thermal Fluids and Materials Laboratories

B ME 334, B ENGR 321 · 2026

- Measured convection, pipe friction, and pump performance with ANSI/ISA uncertainty analysis; closed an energy balance within 2.6%.
- Characterized metals through tensile, Rockwell hardness, and Charpy impact testing, including at liquid-nitrogen temperature.

Arduino Robot Car

Self-directed

- Brought up each sensor and actuator individually before integrating a four-wheel-drive robot, and wrote programs estimating its velocity from ultrasonic ranging and timed traverses.

HANDS-ON ENGINEERING EXPERIENCE

Volunteer Mechatronics Engineer — Land Development Project

2024 – Present

- Assisted two automatic transmission replacements, diagnosing slipping from an RPM–acceleration mismatch and validating the repair with fluid service, leak checks, and road tests.
- Recovered an abandoned engine-driven pump, then helped move the site's supply to a shared well via buried pipe.
- Returned a failing generator to service; placed shipping containers and installed steel truss arches at height for a barn.

SOFTWARE EXPERIENCE

Software Developer Engineer Intern — AlienTech Software

2023 – 2024

- Worked on Clumi, a local cloud stack emulator on Azure and AWS, and an open-source GPT-4 cover-letter tool in C# and React.