# Robert Leduc

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## Education

**University of Victoria** – BEng Mechanical Engineering Dec 2024

## Skills

**Computer-Aided Design/Machining:** SolidWorks, SolidWorks PDM, Fusion 360, Mastercam
**Software/Languages:** Excel/Sheets, Word/Docs, MS Project, MATLAB, C, C++, VBA

## Work Experience

**Mechanical Engineer Co-op,** Center for Aerospace Research – Sydney, BC May 2023 – Aug 2023

- Developed custom SolidWorks API/VBA macros to extract airfoil data from CAD models.
- Designed and manufactured a landing gear camera and integrated it into the vehicle's fuselage and wiring harness. It was used by the aircraft designers to monitor and improve the landing gear system.
- Created a detailed mass/inertia CAD model for a multilayer composite fuselage. Worked with the manufacturer to produce test coupons to increase model accuracy. Model was used by researchers to design a flexible wing aircraft.

**Mechanical Engineer Co-op,** Dometic – Vancouver, BC Sept 2020 – Apr 2021

- Developed a bolted joint calculator and authored a chapter of the internal bolted joint design guide.
- Built a pressure relief valve testing system with LabView and NI instrumentation.
- 50 hours of one-on-one manual mill and lathe training from the prototype machinist.

## Formula SAE

**Team Principal/Club President** June 2023 - June 2024

- Lead a 50-student team design, build, and compete with a Formula SAE race car. Brought the car and team to Formula SAE Michigan, winning the team's first trophy in its 20+ year history.
- Delegated over 500 tasks over a 10 month vehicle development period using MS Project. Created gantt charts, tracked workload of all team members, and met all major long term deadlines.
- Secured $75k through grants, donations, and sponsorship agreements, and $20k more of in-kind goods and services. Allocated funds between vehicle development and providing courses in welding, HV safety, and CNC machining.
- Established the University of Victoria's first ever electric vehicle battery development program.

**Chassis Design Lead** June 2022 - June 2023

- Designed and manufactured a race car chassis. Used Solidworks FEA to compare multiple designs.
- Optimized stiffness to weight ratio, targeting cornering performance tuning range.
- Focused on serviceability, including a bespoke engine install system and service access points.
- Removed 60 hours of manufacturing time through process improvements, including fixturing and quality assurance.
- Designed a 2-way clutch handle, minimizing weight with machined aluminum parts bonded into a CFRP hockey stick.

## Other Projects

**Undergraduate Honours Thesis** Sept 2024 - Dec 2024

- Used MATLAB to create a 7-DoF state space model of the Formula SAE vehicle's suspension, coupled to a four wheeled yaw model for full-vehicle lap time simulations.
- Performed system identification using experimental modal analysis (vibration testing) to increase model accuracy. Integrated accelerometers into the vehicle to identify the frequency response matrix through impulse tests.

**Custom Dynamometer/Test Bench** Nov 2023 - Apr 2024

- Designed and manufactured a bespoke motor test stand for an industry client, capable of applying both braking torque and axial loads to the motor to simulate operating conditions.
- Designed dozens of machined parts and sourced components such as bearings, hydraulic rams, and load cells.