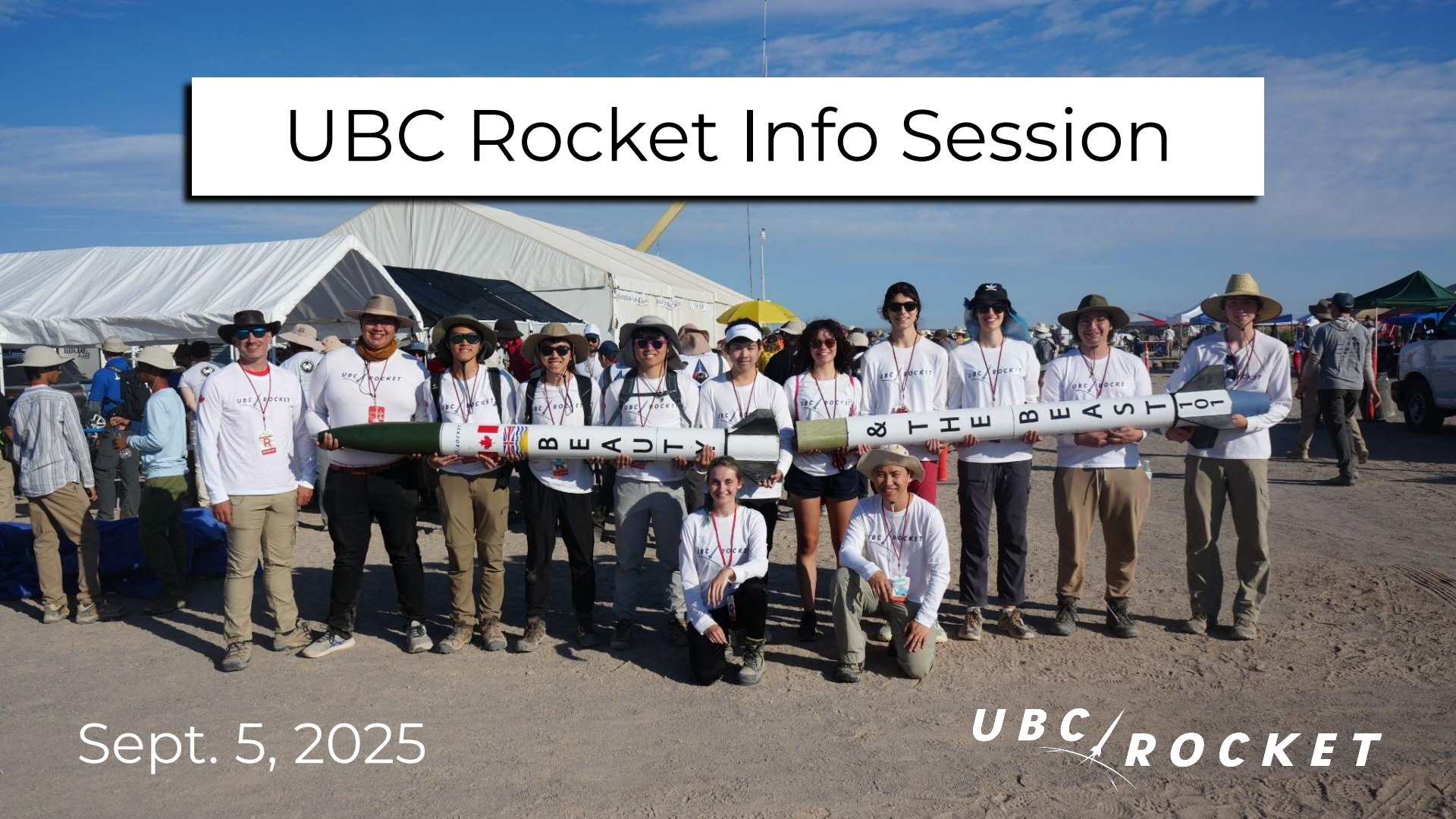
UBC Rocket Info Session



Sept. 5, 2025

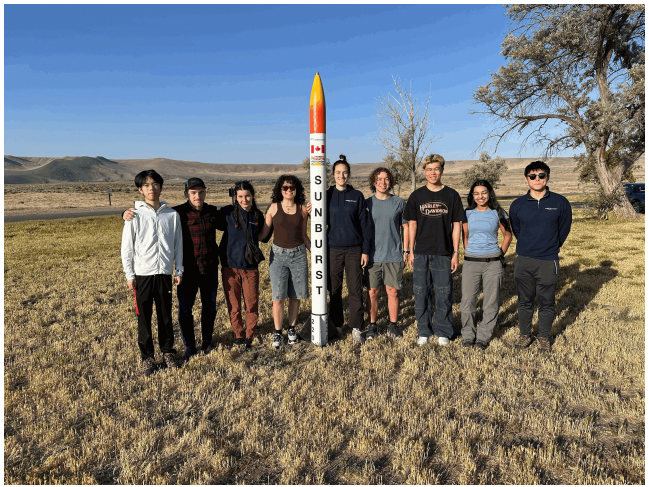
UBC ROCKET

Who are we?


Hennings Building
Department of Physics and Astronomy
6224
Agricultural Road
UBC ROCKET

About the team

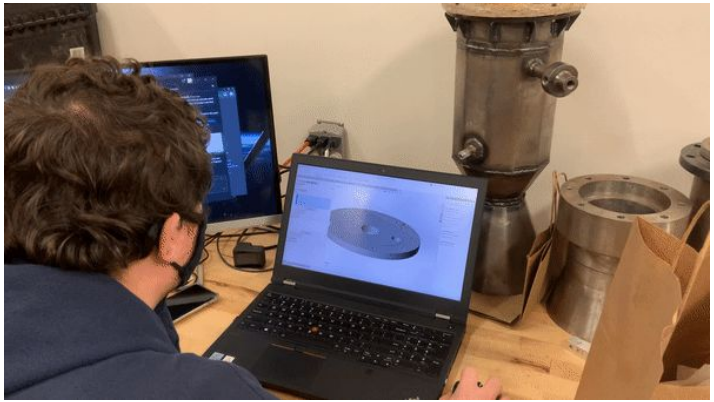
- Founded in 2016
- One of the largest design teams at UBC
- Builds rockets
- Launch rockets annually



Why should I join?

Why should I join?

- Top-tier engineering experience
- Co-op opportunities
- Competition road trips
- You get to build literal rockets
- Life-long friendships



Places **where** UBC Rocket Members Work

“Describe UBC Rocket in five words or less…”

Dream come true, cool explosions
-Naomi

Competition was the most fun I have ever had.
- Viki (doesn’t know how to count)

The best design team ever
- Diba

Out of this world
-Taher

Hands-on engineering and design experience
-Kiara

TATTOO WORTHY!!!!!
-Also Naomi

Learn the art of rocket-building!
-Nate


Projects

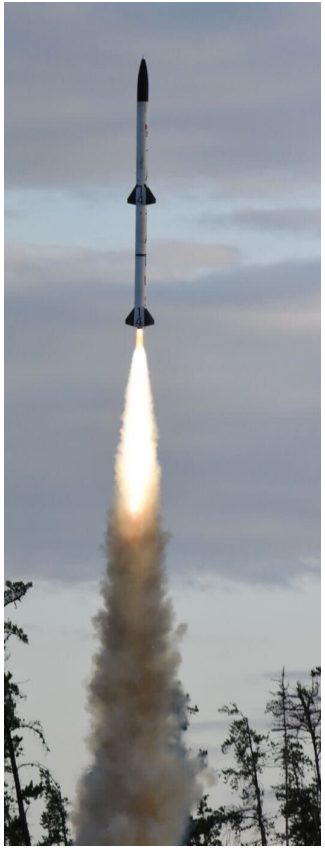

Liquid
Rocket


COTS
TALUS


Thrust
Vectoring

COTS Rocket

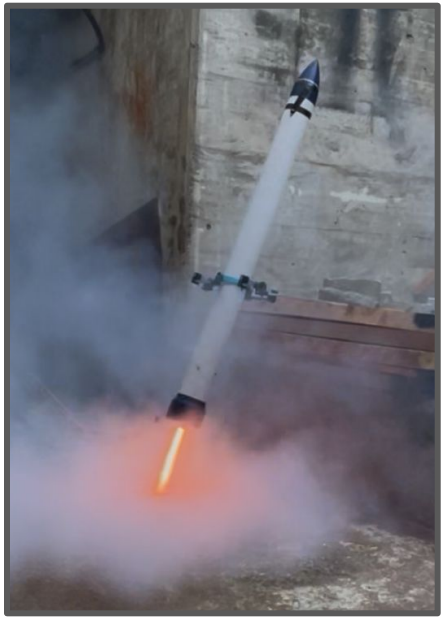
- Flagship project, new rocket every year
- Build the rocket, buy the motor
- Past years rockets:
  - Beauty and the Beast (2023) - two stage
  - Garibaldi (2024) - two stage
  - Sunburst (2025) - single stage
- Typically 10k or 30k ft apogee
- **This year's project: ??????**

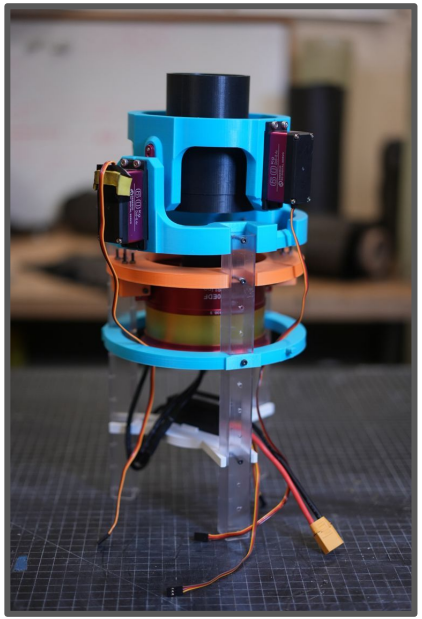


Videos from 2024

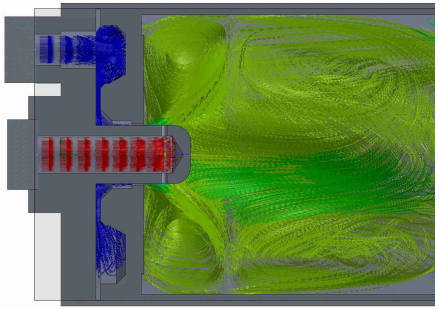
Thrust Vectoring

- Actively Controlled Vehicle
- Won second place in Launch Canada Technology Development Challenge category in 2024
- Rocket-Drone as a stepping stone to a self-landing rocket

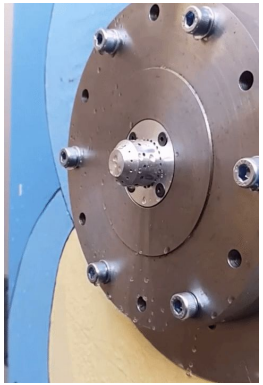




Liquid Rocket



- Liquid bi-propellant rocket
- This includes propulsion, plumbing, and a test stand
- One year push for a nitrous-ethanol flight vehicle
- Starting from “scratch” - lectures on propulsion this term



What can I do on the team?

Teams that are hiring:

COTS ROCKET:

- Composites & Aerostructures
- Avionics
- Internals
- Recovery
- Payloads

THRUST VECTORING:

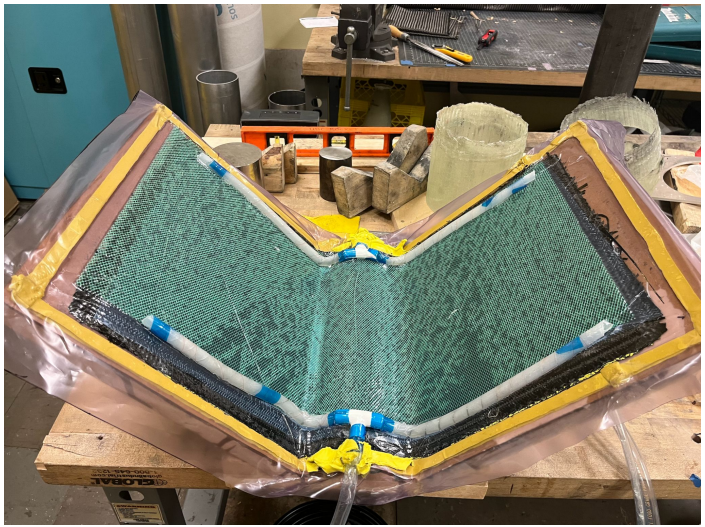
- Avionics
- Mechanical Design
- Embedded Software
- Simulation & Controls
- System Validation

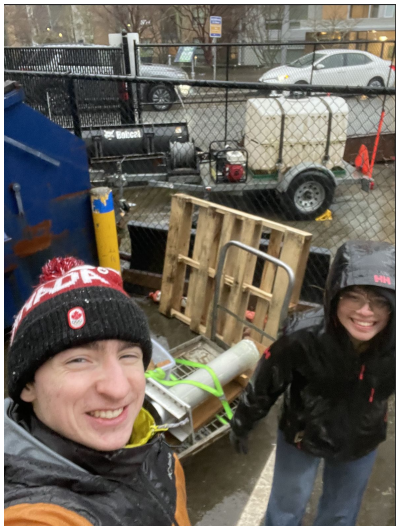
LIQUID ROCKET:

- Avionics
- Internals
- Ground Support Equipment
- Propulsion

Composites:

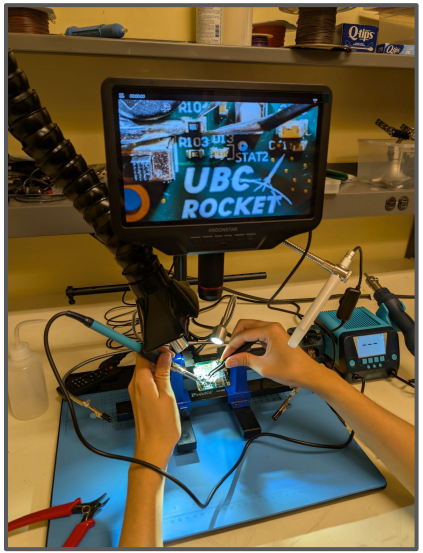
Composites & Aerostructures work on the design and manufacturing of all aerodynamic surfaces on the rocket. This includes body tubes, couplers, nosecones, and fins. You will work with fibreglass and carbon fibre to develop the rocket's airframe via composite manufacturing processes. If you love building and manufacturing, this is the subteam for you!

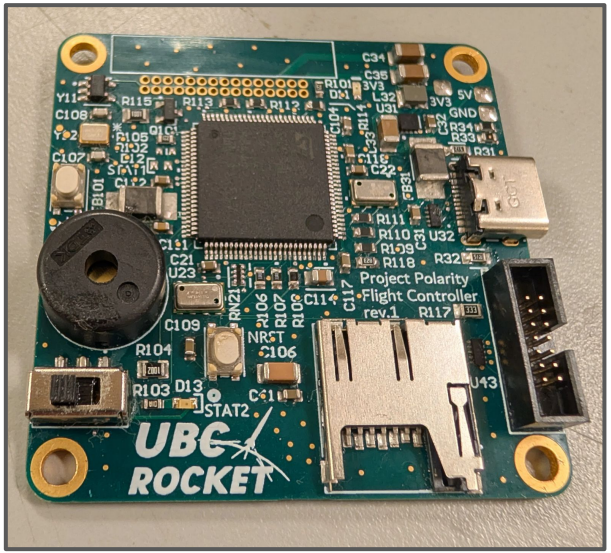




Avionics (Hardware/Firmware/Software):

The Avionics team is responsible for designing the electronics hardware, firmware, and ground station software which facilitate parachute deployment, GPS tracking, live telemetry, radio communication, and data logging.



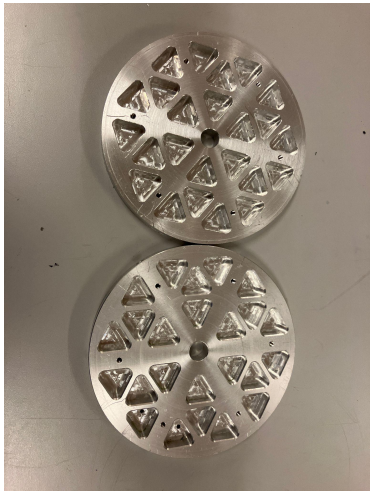


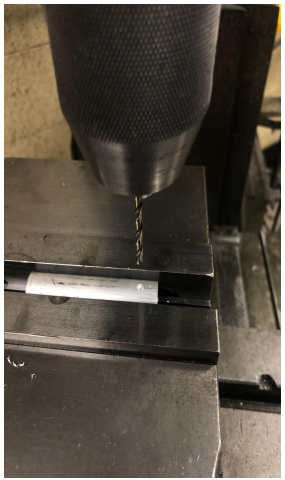
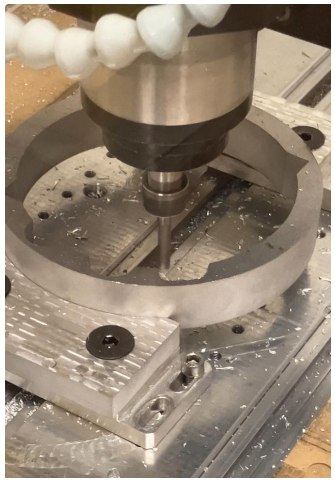
Avionics Hardware+Firmware Projects:

- Flight Controller
- Sensor Board
- Pyro Board
- Power Board
- Back Plane
- Live Telemetry & Video w/ Antenna Tracker
- Avionics Bay
- Test Rocket

Internals:

The Internal Structures team designs and manufactures internal components used to integrate mission critical subsystems such as avionics, recovery equipment, propulsion and a payload. Members of Internals will develop strong CAD (SolidWorks), finite element analysis (FEA) skills. In addition they will learn manufacturing skills such as mills, lathes, waterjet cutters, 3D printers and will even get to work with UBC Rocket's own CNC mill.



Recovery

Going up is only half the story! Bringing your rocket safely back to Earth is essential for a successful mission. With their skilled analysis, the Recovery team uses the mass and the flight profiles of the rocket to determine parameters such as the size and types of the parachutes, recovery system deployment mechanisms and design tests to ensure these systems are reliable. Recovery also has a critical role in manufacturing parachutes and associated hardware.



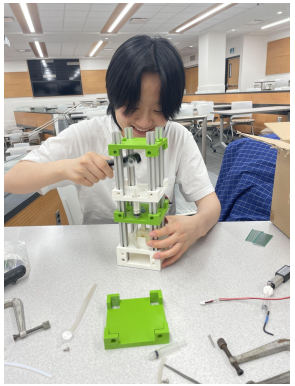

Payloads:

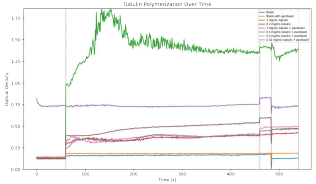
At Payloads, you'll get to apply and expand your engineering skills in ways that go far beyond the classroom. Each year pushes us to solve problems from scratch, testing creativity and technical ability to the limit.

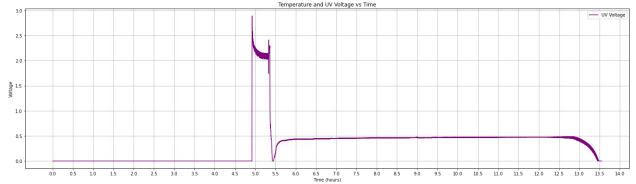
This year, we're continuing development of a specialized spectrophotometer designed to study how tubulin polymerization is affected by changing gravity conditions.

This involves designing precise electronics, mechanical structures, and software programs to get real scientific results!

If you're excited about honing your mechanical, electrical, and/or software skills while producing something tangible, impressive, and resume-worthy, Payloads is the team for you.

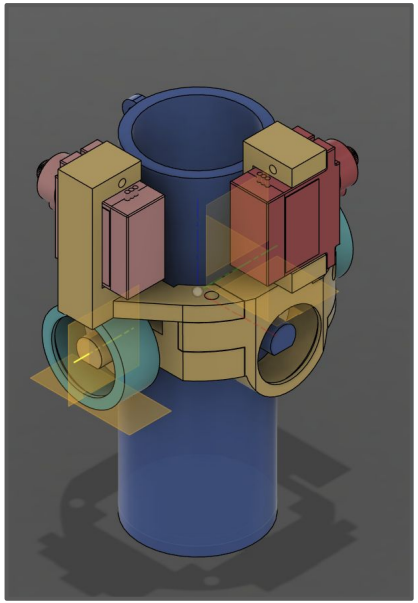


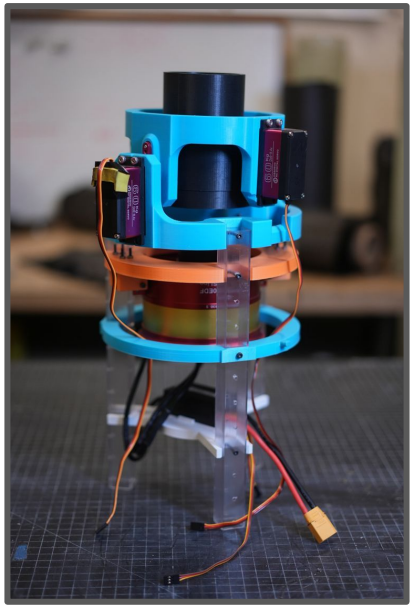


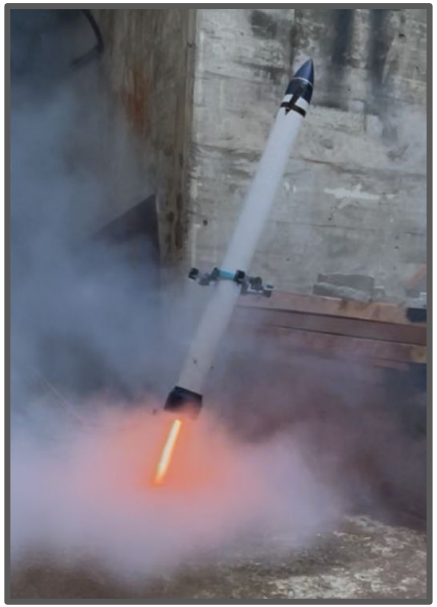


Thrust Vectoring:

The Avionics and Thrust Vectoring Team will be designing and building an actively controlled rocket gimbal mechanism comprising of various electronics and mechatronic systems. We will also develop our own firmware and controls.







Liquid Project

The Liquids team is a fast-moving, hands on team that simultaneously researches and builds propulsion systems. Things to do include and are not limited to:

- CAD design & analysis
- Machining and DFMA
- Hydrostat and cold flow testing
- Hotfires
- Test stand development
- Many of the things COTS does
    - Recovery
    - Avionics
    - Vehicle structure

https://www.youtube.com/watch?v=1boJr-b7Rl4

Competitions

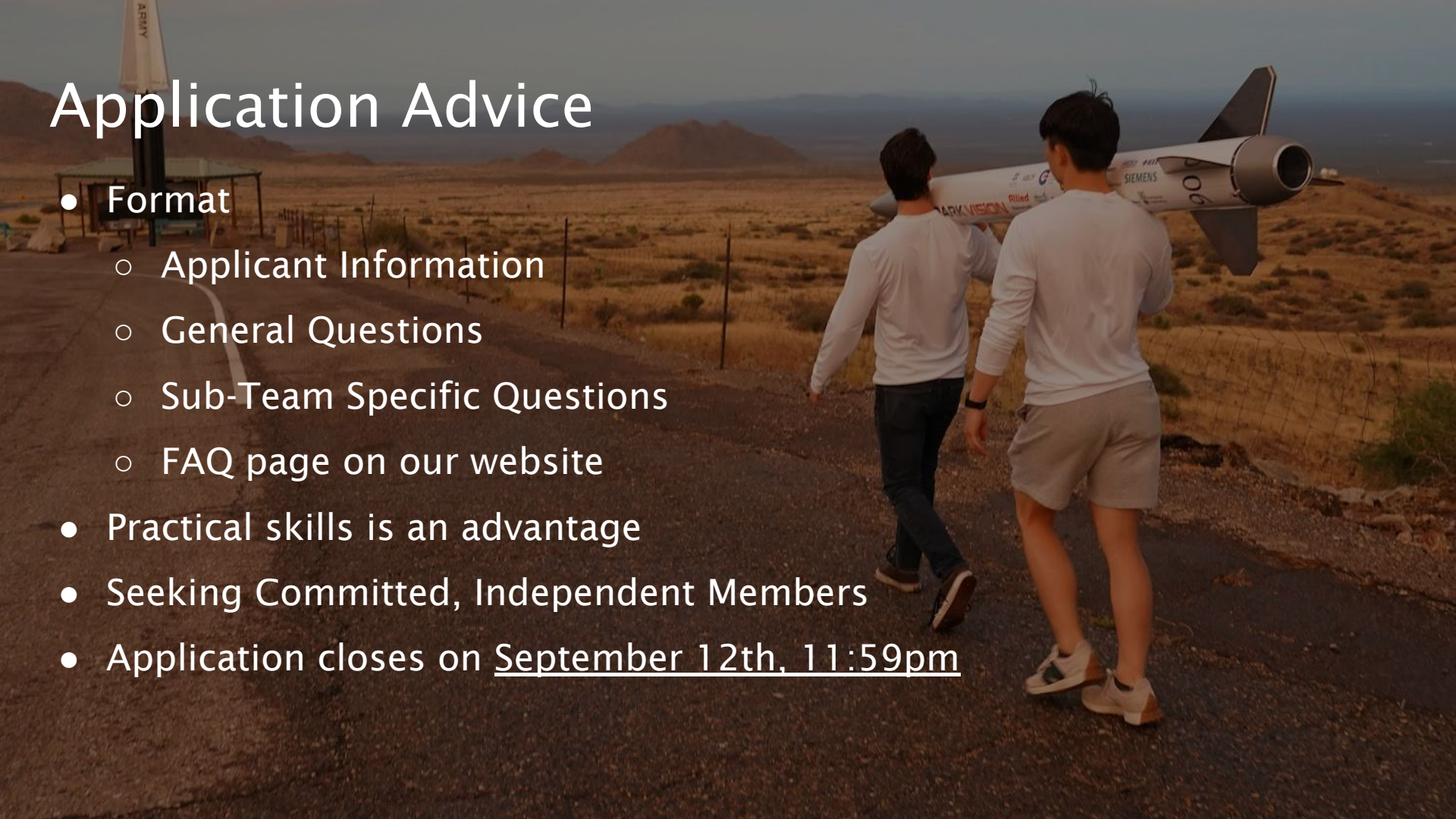
Competitions

- **International Rocket Engineering Competition [IREC]**
  - Was held in Midland, Texas, USA in June 2025
- **Launch Canada**
  - Was held in Timmins, Ontario in August 2025

Application advice

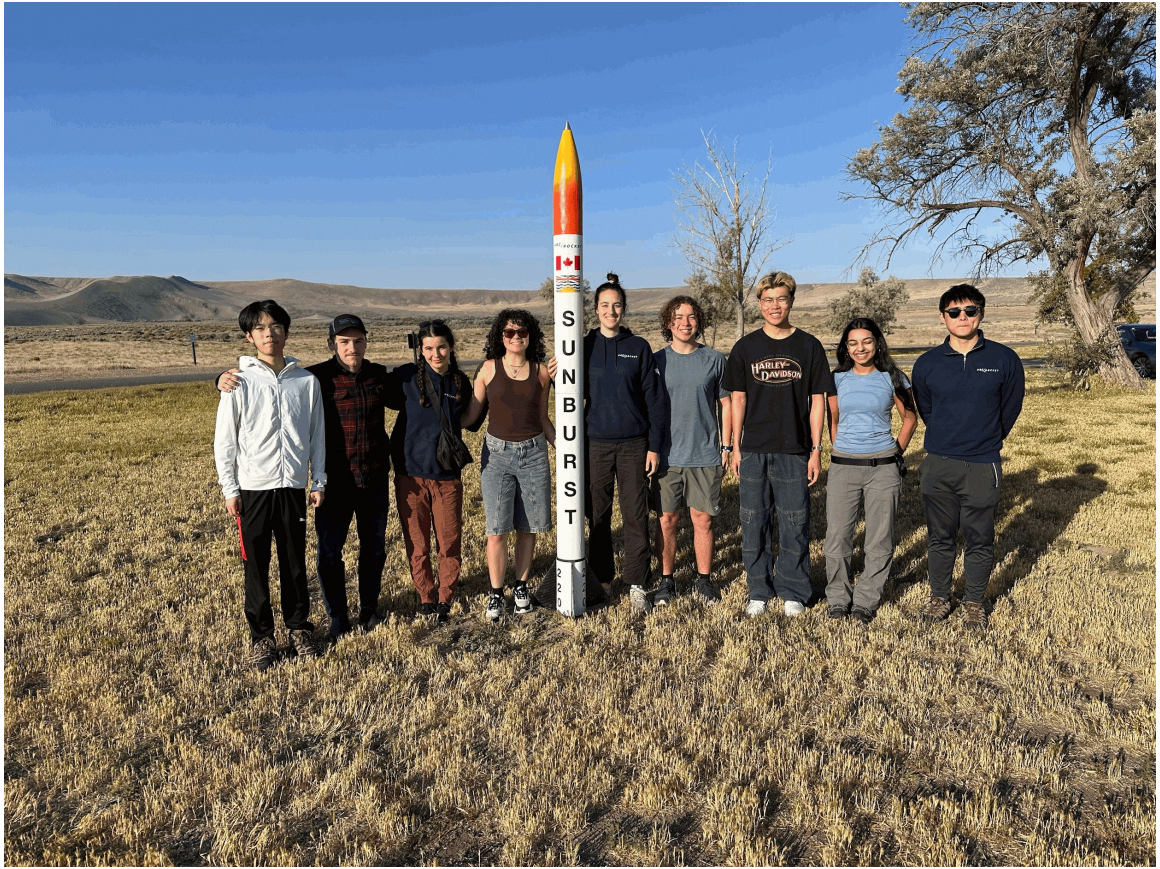
Application Advice

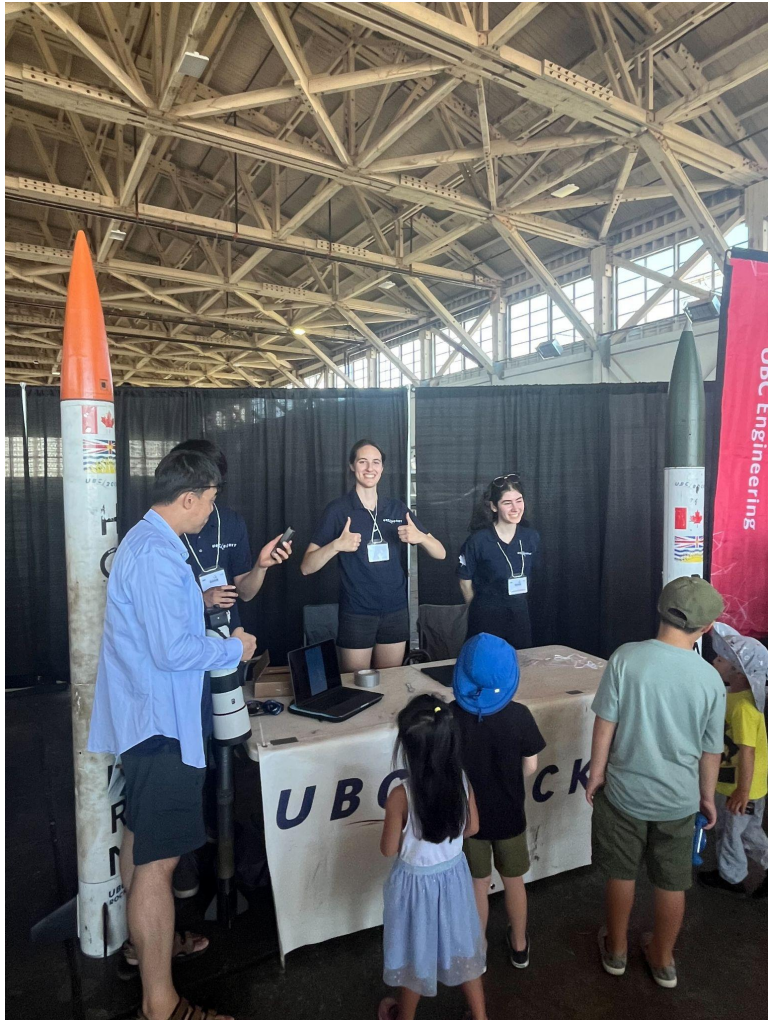
- Format
  - Applicant Information
  - General Questions
  - Sub-Team Specific Questions
  - FAQ page on our website
- Practical skills is an advantage
- Seeking Committed, Independent Members
- Application closes on <u>September 12th, 11:59pm</u>



This could be you...

You could be posing for a team picture on your way down to Texas…





You could be presenting our rockets to children at the airshows…

You could be rolling down sand dunes in Idaho…

You could be…

You could be sleeping in anything but a bed…

You could be recovering the rocket…

You could be waiting for the rocket to launch…

You could be building a rocket motor…

UBC ROCKET

YOU COULD BE APPLYING TO UBC ROCKET🚀🚀🚀

ICE CREAM TIME

🚀🚀