

# Senior Propulsion Designer - Liquid Rocket Engine

---

## Description

SFU Rocketry is seeking Senior Propulsion Designers to join our Propulsion Subteam working on our Liquid Rocket Engine (LRE) project. On this team, you will work with the rest of our propulsion group to design our next-generation engine, and its subcomponents. Some of these components include the injector, igniter (likely an augmented spark igniter, but you will conduct trade studies to analyze different options), nozzle, cooling system, and more. You would also work with the rest of the team to run subsystem tests (cooling, injector flow testing, and the like), as well as full-scale engine test fires. Knowledge of rocket engines and their components would be a significant asset, and knowledge of / coursework regarding fluid mechanics (MSE 223 / ENSC 283 / SEE 225) would be a minimum for this role.

## Duties & Responsibilities

- Using Solidworks to design engine components
- Running CFD, FEA, and thermal analyses as necessary to validate component performance
- Creating engineering drawings and designing for manufacturing
- Sourcing components and ensuring their specifications meet our requirements
- Mentoring junior propulsion designers, teaching them about fluid mechanics and rocket engine.
- Coordinating major tests, creating testing procedures, and ensuring safe testing practices
- Coordinate with other subteams (fluid systems, controls, etc.) as required
- Creating technical reports on the work you've done, possibly presentations for competitions
- Contribute with a minimum of 5 hours of work and 1 hour of meetings per week

## Key Qualifications

- Working knowledge of propulsion (engine and fluid system) components
- Knowledge in several of the following areas:
  - Fluid mechanics
  - Combustion chemistry
  - Mechanical design
  - Thermodynamics
- Working knowledge of pressurized system design, pneumatics, etc.
- Solidworks design
  - FEA, CFD, thermal analyses are strong assets
- Must be able to work independently and within teams
- Strong self-learning ability
- Creativity, ability to think outside the box, is a strong asset
- Thorough attention to detail
- Self-starter, inspired to initiate action
- Professional communication skills, verbal and written

# Education & Experience

- Students pursuing a Mechatronics Systems, Mechanical Engineering, Systems Engineering, or equivalent undergraduate or graduate degree at Simon Fraser University (preferred)
- Preference for third year if in undergraduate studies
- Faculty or staff members of Simon Fraser University are welcome to apply
- Preference for this role given to those with related experience in key qualifications, though all levels of experience are encouraged to apply

# Job Details

- Part-Time / Casual
- Volunteer Student Design Team Position
- In-Person - Surrey SFU Engineering Building
- Commitment for a minimum of 9 months after onboarding
- Frequent promotion opportunities to Lead positions

# Statement from SFU Rocketry

SFU Rocketry is an inclusive and equal opportunity organization. We welcome, include, and respect all regardless of race, colour, ancestry, place of origin, religion, family status, marital status, physical disability, mental disability, sex, age, sexual orientation, gender identity or expression, political belief, or conviction of a criminal or summary conviction offence unrelated to employment.

SFU Rocketry is Simon Fraser University's largest active design team in the university's history, and has a strong reputation to uphold. Our members are highly sought-after and have been actively recruited for permanent and co-op intern industry positions. We operate as a professional organization, where professional conduct is required and expected from all SFU Rocketry members at all times.

# Learn More about SFU Rocketry

Visit our website - <https://www.sfurocketry.com>