



## Canadian Stratospheric Balloon Experiment Design Challenge

### CAN-SBX VI (2023 – 2024)

### Application Form

**Notice to Applicants:** Please read the Application Guide on the website in full before completing this application form. You must answer all fields as indicated. Your application may not be considered if there is missing or incomplete information. The application **MUST** be submitted by **11:59 PM Eastern Time (ET) on October 8th, 2023**. If you have any questions, please contact [cansbx@seds.ca](mailto:cansbx@seds.ca).

#### SECTION 1 – TEAM INFORMATION

Team Name: \_\_\_\_\_

Institution: \_\_\_\_\_

#### Team Lead

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Email: \_\_\_\_\_ Phone number: \_\_\_\_\_

#### Faculty Advisor

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Institution: \_\_\_\_\_ Department: \_\_\_\_\_

Email: \_\_\_\_\_ Phone number: \_\_\_\_\_

On the following page, please complete the information for every student member on the team. **Proof of enrollment is required for each participant.** Please attach with the completed application. At least one member of the team must provide proof of active SEDS-Canada membership if accepted for the competition.

**Team Members.** A minimum of 4 team members is required, including at least two engineering students. The majority of the team should be composed of undergraduate students with no more than 1/3 of the team composed of graduate or high school students.

[illegible]

Notes:

- Role on the team examples: team lead, electrical, structural, science, outreach, advisor, etc.
- At least one team member must be identified as “Team Lead” who will act as the primary point of contact.
- At least one team member must be identified as “Outreach Lead”.

## **SECTION 2 – PROJECT SUMMARY**

Project title: \_\_\_\_\_

Lay abstract (150 words max):

## Eligibility Requirements

We've reviewed and understood the experimental environment described in this section. In addition, we confirm that our design meets the following eligibility requirements (**review and check off all**):

The payload must be...

- ☐ Contained in a cylindrical volume of up to 524 mm in height and 285 mm in diameter.
- ☐ Weight no more than 5 kg.
- ☐ Self-powered: the balloon gondola will not provide power to the payload.

The experimental design must be able to function under flight constraints that are...

- ☐ Non-pointing: balloon orientation is not controlled.
- ☐ Non-insulated: balloon temperature is not controlled and can reach temperatures of -56 degrees Celsius.
- ☐ Flight window during the daytime of up to ~3 hours and up to 30 km in altitude.

The experiment must also meet the following safety requirements such as...

- ☐ Be free of materials classified as physical, health or environmental hazards under Canada's Hazardous Products Act such as high-pressure, toxic, corrosive, explosive and flammable materials. See Section 12.1. Note that any non-hazardous substance requiring secondary containment (e.g. water or dust) will need to be structurally tested for maximum loads experienced during the flight.
- ☐ Be free of hazardous radiation (e.g. Class 3 and 4 lasers).
- ☐ The experiment must fall to a safe configuration in the event of electrical power loss.
- ☐ Exclude the use of human and animal test subjects which would require Research Ethics Board approval. See note about biological specimens below.

**If biological specimens are used**, it must:

1. Not present any risk to humans, wildlife, and the stratospheric balloon platform itself. Specifically, the specimen must fall under **Biosafety Level/Risk Group 1**. You should submit a safety data sheet, or point to a database (e.g. <https://health.canada.ca/en/epathogen>) or other resource which shows the Risk Group (RG) classification of your specimen.
2. Be contained within a sealed space capable of withstanding the physical parameters of parabolic flight (g-forces, pressure, temperature, vibration). See Section 2.3.
3. Not be handled directly by experimenters during flight.

## SECTION 3 – PROPOSAL

The proposal must adhere to the following formatting guidelines:

- Standard 8 ½" x 11" pages
- 1" margins on the top, bottom and sides
- 12-point Times new Roman font
- Numbered pages on the bottom right corner
- Limited to 20 pages, not including appendices
- Submit application form, proposal, and supporting documents as a **single PDF file**

The proposal should contain the following sections:

- ☐ **Section 1: Introduction**
  - 1.1 Motivation
  - 1.2 Novelty of Experiment
  - 1.3 Goals
  - 1.4 Importance to Canada's space sector
  - 1.5 Research Hypothesis
- ☐ **Section 2: Experiment Concept Design**
  - 2.1 Scientific Objectives
  - 2.2 Science Traceability Matrix
  - 2.3 System Architecture
  - 2.4 Block Diagram
- ☐ **Section 3: Concept of Operation**
  - 3.1 Equipment Requirements
  - 3.2 Environmental Requirements
  - 3.3 In-flight Operations
- ☐ **Section 4: Project Plan**
  - 4.1 Funding Strategy
  - 4.2 Outreach Strategy

Please refer to the Application Guide for further details on what should be covered in each section and for the evaluation criteria.

## SECTION 4 – SUMMARY AND SIGNATURES

Submit a single PDF file containing the following items to [cansbx@sed.s.ca](mailto:cansbx@sed.s.ca) by **11:59 PM ET on October 8:**

- ☐ Completed and signed application form
- ☐ Completed proposal
- ☐ Proof of enrollment for each team member

Please name the PDF file using the following format: Teamname\_SBX\_Application\_year

### Team Lead

- ☐ **Timeline Acknowledgement:** I certify that the team will adhere to the milestone timeline of the CAN-SBX competition. I certify that it is the responsibility of the Team Lead to monitor the CAN-SBX website ([sed.s.ca/can-sbx](http://sed.s.ca/can-sbx)) and monitor communications from SEDS-Canada for changes to the timeline.
- ☐ **Funding Expectations:** I acknowledge that team is responsible to fully fund the development of our project and the logistics of travel to the Campaign site.
- ☐ **Publicity Guidelines:** I shall acknowledge the work of SEDS-Canada in the organization of this campaign and include SEDS-Canada as a contributor in external publicity, social media materials, outreach activities.
- ☐ I certify that I will serve as a team lead and a primary point of contact for the team. I agree to inform SEDS-Canada at [cansbx@sed.s.ca](mailto:cansbx@sed.s.ca) promptly of any changes to the team lead position and primary point of contact.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Faculty Advisor

- ☐ I certify that I will serve as a Faculty Advisor for this project, and I understand that I will be asked to provide guidance and support through some or all of the phases of the challenge, including submission of the project Proposal, Preliminary Design Review, Critical Design Review, and other milestones.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_