



The Canadian CanSat Design Challenge 2026-27 Rules & Requirements BEGINNER Category



Prepared by the Canadian Satellite Design Challenge Management Society, with generous support from:

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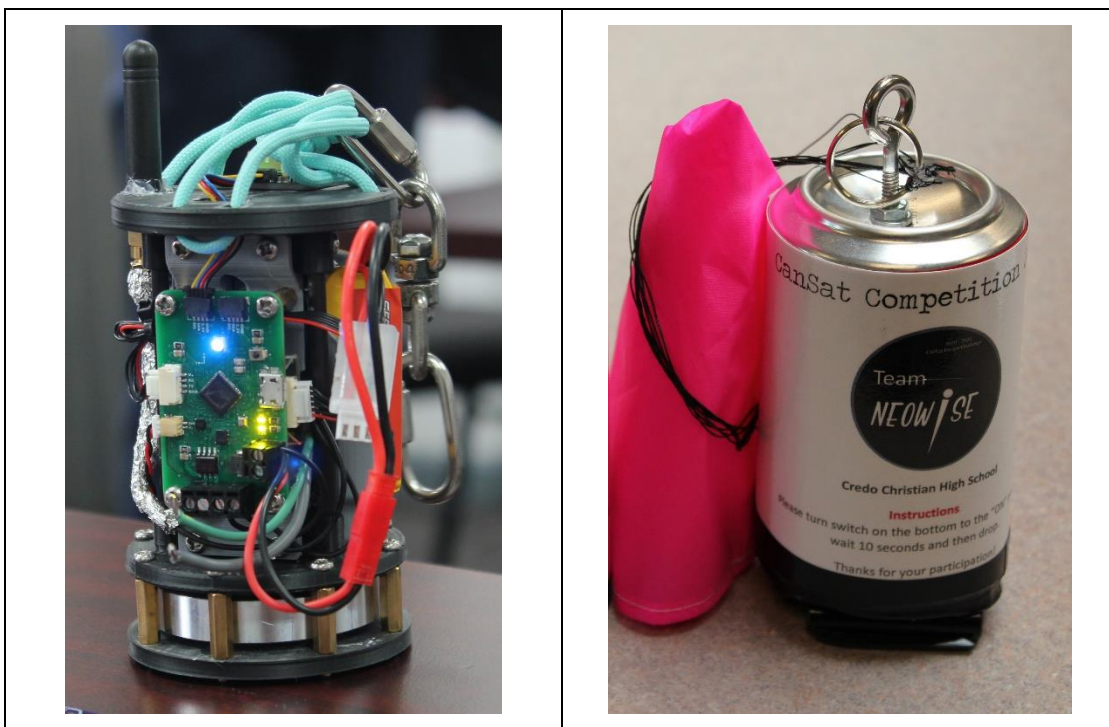
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INTRODUCTION

The Canadian CanSat Design Challenge is an educational initiative which requires teams of secondary-school students to design, build, and launch their own miniature satellite called a “CanSat”. A CanSat is a simulation of a real satellite, which is the size of a standard pop can, and weighs between 300 and 350g.

The CanSat contains a small computer, a sensor to record air temperature and pressure, and an additional experiment of the team’s choosing (we will provide one that you can use if you want, but you are welcome to choose a different experiment). The CanSat saves this data on-board, on a memory card.



A CanSat is a pop-can-sized “satellite.”

For the **BEGINNER** Category, once your CanSat is completed, it will be carried up by a drone to an altitude of between 120m and 600m, then dropped to parachutes down to the ground. All this time it will collect the experiment data, which you will later analyse.

Participation Categories

Two categories of the competition are offered: **Beginner** and **Advanced**.

Which category is right for your team? The following diagram illustrates the main differences between them, to help you choose the right one for you.

Category Details	Beginner	Advanced
Team Size	Two to four people, in any grade.	Four to six people, in any grade.
CanSat Requirements	- Record air temperature and pressure once per second. - Add a second experiment of your choice (but we'll provide one if you want to use it). - Save the data on-board on a memory card.	- Record air temperature and pressure once per second. - Add a second experiment of your choice. Advanced teams are expected to add an interesting or challenging science or engineering experiment. - The CanSat transmits the data via radio, and you receive it on the ground.
How much will it cost?	Almost nothing! We will provide you with a kit with almost all of the components, and video tutorials to guide you. You just need to find a can and a few tools! You can then mail your CanSat to us, and we'll drop it from a drone for you.	- Your CanSat must cost less than \$500. - You need to raise enough money to attend the launch event in Alberta. This includes paying for travel to Calgary, four nights in a hotel, and some meals.
Is it suitable for me?	If you have little to no experience with electronics or programming.	If you have some experience with electronics and programming, and want a bigger challenge.
Reports to write?	No!	Yes! A Design Report is required.
Presentations to give?	At least one presentation to younger students, or an outside group.	At least three presentations, to younger students and the public. Offering to give a presentation to a potential sponsor is a great way to help raise funding to attend the launch campaign.
When does it start?	We will send you the CanSat kit by the middle of December. You start building it in January, and the launch event will be in late-May or early-June, 2027. You only have to mail us your CanSat; no travel required.	As soon as you're ready! The Launch Campaign will be held around the end of April, 2025, in Alberta.

CanSat Video Tutorials

The CSDCMS has created a number of publicly-accessible video tutorials on YouTube, located at:

<https://www.youtube.com/@CSDCMS>

These tutorials guide you through the process of assembling and testing a Beginner category CanSat, from when you receive your CanSat kit, to the final finished product.



COMPETITION SCHEDULE

These are subject to some changes, but hopefully not many!

Beginner Category	
Registration Deadline	November 1, 2026
CanSat kits sent to teams	By December 15, 2026
Design! Build! Test!	January to May, 2027
CanSat mailed to CSDCMS	By May 14, 2027
Launch Event	Late May / Early June
Post-Launch Analysis Conference	Saturday June 12, 2027

Monthly Presentations and Q&A (Online)

There will be a monthly online meeting (e.g., by Zoom or Teams) in which we will give a short presentation about space industry and space mission topics. There will also be time for teams to ask questions about the presentation or their CanSat (e.g., if they are having technical issues). This will be scheduled for the **second Saturday of each month, starting in January**. The sessions will begin at 8:30 a.m. Pacific Time.

Note: Starting in Autumn of 2026, British Columbia will remain on Standard Time, and will not “fall back” to Daylight Savings Time. However, most of the rest of the country will “fall back”. That would mean that in January and February, and potentially also March, the sessions will begin at 10:30 a.m. Eastern Time. Are you confused yet?

So, the dates will be:

Saturday, January 9

Saturday, February 13

Saturday, March 13

Saturday, April 10

Saturday, May 8

Final Results Conference

There will be an online meeting on Saturday June 12 (also starting at 8:30 a.m. Pacific Time) to review each team's data results from the drone-drop.



General Rules

Student & Team Eligibility Requirements

Teams in the Beginner category must have at least two students. Three is a reasonable maximum, but we leave that to your discretion.

All team members must be legally considered of "school age" in the province or territory where they reside. There is no specific minimum age or school grade for team members, but the competition is currently intended for students who have completed elementary school. In some provinces, secondary school or middle school starts at Grade 9; in others, it is Grade 8. Past competitions have even had participation from one or two students in Grade 6, though.

Team members may either be enrolled full-time in a provincial/territorial school, or registered for home-schooling per their provincial requirements. The team members may be from different schools, or from a non-school group (e.g., a STEM club, Scouts, Girl Guides, etc.).

Team Supervisor

Each team must have a supervisor, i.e., a teacher or other mentor, who will be responsible for monitoring the team's technical progress, offering help and advice, and acting as the team's point of contact with the CSDC Management.

Language of Communication

Communications with the CanSat Management may be in either English or French.

How to Register

Please complete the Registration form on our website (www.csdcms.ca), under "CanSat Design Challenge".

There Is No Registration Fee!

There is no cost to participate! Really! In the Beginner category, you will most likely need to mail your CanSat to us, but that's the only expected cost.

How to Contact Us

The point-of-contact for the CanSat Design Challenge is:

Lawrence Reeves
e: LReeves@csdcms.ca
m: +1 778-988-6343

Email contact is preferred.



MISSION & TECHNICAL REQUIREMENTS

The following terminology is used for the requirements:

- “**must**” denotes a requirement which is **mandatory**;
- “**should**” denotes a requirement which is **optional, but recommended**;
- “**may**” denotes a requirement which is **optional**.

Primary & Secondary Missions

1. When turned ON, your CanSat **must** measure and record the air pressure and air temperature once every second.
2. Each team must implement a secondary experiment of their own choosing, which fits within the CanSat.

Note: CanSat kits will contain a potential secondary mission (e.g., a sensor which measures accelerations), but you are welcome to select an alternate experiment. Teams can take ideas from real satellite missions, or collect scientific data for a specific project, make a technology demonstration for a student-designed component, or any other mission that would fit inside the CanSat and show its capabilities.

3. The CanSat **must** save all of its experiment data on memory integrated inside the CanSat. The SD-card **should** be easily accessible, or connectable, in order to make it easy to copy the data from it afterwards (we will email the data to you immediately after the CanSat is dropped).

Dimensions and Mass

4. All the components of the CanSat must fit inside a standard soft drink can (115 mm height and 66 mm diameter), with the exception of the parachute and parachute connector. Any radio antennas (e.g., GPS) may be mounted externally on the top of the can, but not on the sides.

Note: The drone has individual tubes for each CanSat that it carries. They are 75mm in diameter, and your CanSat must fit into it and be able to easily drop out.

5. Elements of the CanSat **must** not extend beyond the can’s diameter until it has left the drone tube.
6. The mass of the CanSat **must** be between a minimum of 300 grams and a maximum of 350 grams. CanSats that are lighter **must** take additional ballast with them to reach the 300 grams minimum mass limit required.



Power

7. It **must** be possible for the CanSat to remain powered on for at least 30 minutes, and to be able to collect and record/transmit data during that time.
8. The battery **should** be easily accessible in case it has to be replaced/recharged.
9. The CanSat **must** have an easily-accessible master power switch.
10. The CanSat **must** have an “ON” light which **must** be obvious to notice when the CanSat is powered on.

Parachute and Safety Considerations

11. The CanSat must use a parachute to slow its descent rate. The descent rate must be between 5 and 12 m/s, and should be between 8 and 11 m/s. It is highly recommended to use brightly-coloured fabric (e.g., “high-visibility orange”) for the parachute, to facilitate recovery of the CanSat after landing.

Note: This is an important safety requirement, to ensure that your CanSat doesn't descend too quickly (impact danger) or slowly (it might drift away in a breeze).

12. The parachute connection must be able to withstand up to 15 Newtons of force (equivalent to ~1.5 kg of weight). The strength of the parachute must be tested to ensure that the system will operate nominally.

Note: In past Advanced Category launches, 3D-printed top panels which have a single eye-bolt for parachute attachment have sometimes broken, resulting in the loss of the CanSat. It is recommended that you use either multiple attachment points for parachute strings, or something stronger than a 3D-printed material.

13. The CanSat must not have any explosives, detonators, pyrotechnics, spring-loaded components, or flammable or dangerous items.

Note: Management reserves the right to exclude any CanSat which it considers to be in any way hazardous.

Educational Outreach Presentations

14. Each team must give at least one presentation to one or more of the following groups:
 - an elementary school class or group;
 - a junior secondary school audience (Grades 8 to 10); and,
 - a public audience, such as a school “Open House”, a teachers’ conference, or other adult-level audience.

Note: Only one presentation is required, but you are welcome and encouraged to give more!



Post-Flight Analysis

Teams will receive their data files by email, and will prepare a short presentation of the results of their experiments to be presented at the final online meeting (on Saturday June 12, 2027). For example, you can display the Primary Mission results in a graph which shows the air pressure and temperature over the course of the mission, and the calculated altitude of the CanSat during the mission. Plus the results from your Secondary Mission.

