**Competition Guidelines**

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The reports should be submitted by email at [cansat@rosa.ro](mailto:cansat@rosa.ro) or to [cristina.stancu@rosa.ro](mailto:cristina.stancu@rosa.ro)

# RULES:

1. The official language of this contest will be English, therefore all communication from now on will be written and spoken in English.
2. The overall rules of the 2016 Romanian CanSat Competition will follow the Guidelines of the 2016 CanSats in Europe, exceptions apply for the following:
   1. The **team** should comprise between **4** and a **maximum** of **6** (aged 14+) full-time enrolled secondary school students in an Romanian high-school, assisted by a teacher. The names of all the team members (students) need to be submitted in the Preliminary Design Review Report. **Substitutions are not allowed for the duration of the contest.**
   2. If a conflict occurs between European rules and Romanian Rules, the Romanian Rules will have preference.
3. Students on the team shall do 100% of the project, including design, construction, written reports, presentations, and flight preparation.The teachers will supervise the tasks and submit the reports acording to the outline below.
4. The Design Report template enclosed, which constitutes the model for the Preliminary and Critical Design Review, needs to be completed to the best of your ability.
5. The team shall create a Facebook page where the daily/weekly progress is documented. The team(s) shall establish a Web presence no later than the date specified for the deadline of the PDR. The Web presence shall be maintained/ updated throughout the period of performance.
6. The CanSats must be flight-ready upon arrival at the Launch Campaign in Suceava.
7. An official Facebook Group has been created for the duration of the Competition and teams are advised to ask questions or discuss any concerns by posting there. Comments will be moderated. <https://www.facebook.com/groups/1561248047519388/>
8. Each team has an assigned theme color. The team’s CanSat, CanSat logo and all other printed materials should include this color.
9. The organizers reserve the right to modify the rules of the competition with due notification to the teams.
10. The CanSats will be launched by plane.

## Official Calendar of the 2016 Romanian CanSat Competition

|  |  |
| --- | --- |
| Construction and CanSat testing | |
| Activity | Date |
| Preliminary Design Review (PDR) | 25 March 2016 |
| Critical Design Review (CDR) | 7 April 2016 |
| Final Design Review (FDR) | 12 April 2016 |

|  |  |
| --- | --- |
| Launch Campaign | |
| Activity | Date |
| Launch Campaign Suceava | 14 -17 April 2016 |

## An outline for the Launch Campaign:

|  |  |
| --- | --- |
| Day 1 | Teams arrive  Opening ceremony  Presentations of projects by CanSat teams  Final technical inspection of the CanSats |
| Day 3 | CanSat launch day and data analysis |
| Day 4 | Data analysis  Presentation of results by CanSat teams  Evaluation |
| Day 5 | Closing ceremony  Teams depart |

# EVALUATION AND SCORING

The teams’ progress will be evaluated on an on-going basis during the Construction and CanSat testing Phase and the CanSat Competition launch campaign by the Jury members. The Jury will be comprised of CanSat experts and other special appointed specialists that will evaluate the team’s performance during these phases.

The following items are being taken into account:

* Educational value

For this item, the Jury will consider the quality of the Final Design Report and the team presentations, the level of effort made by the team and how much the team appears to have learned throughout the project.

* Technical achievement

Innovative aspects of the project will be judged, for example: the mission selected and the hardware/software used. It will be also taken into account how the teams obtained results, how reliable and robust the CanSat was and how the CanSat performed. If the CanSat did not succeed in accomplishing the missions but the team is able to explain the reasons why and suggest improvements, it will be also taken into account positively.

* Team work

The Jury will assess how well the team worked together on the assignment, the distribution of tasks, the planning and execution of the project and the team’s success in obtaining the necessary funding, support and advice.

* Outreach

The team will be scored on how well the project was communicated to the school and the local community, taking into account any webpages, blogs, presentations, promotional materials, media coverage, etc.

Marking scheme

The overall balance between the above items to be evaluated is as follows:

|  |  |
| --- | --- |
| 1. Educational value | 20% |
| 2. Technical achievement | 50% |
| 3. Team work | 15% |
| 4. Outreach | 15% |
| TOTAL | 100%% % % % |

The final score of each team will be made up by the points gathered from the evaluation of the Jury.

# COLOR SCHEME AND APPOINTED FREQUENCY:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Echipa | Coordonator | Localitatea | Liceul | Network ID | Frecventa Secundara | Culoare format RGB |
| RobotsFever | Măgurean Marius-Daniel | Câmpulung Moldovenesc | Colegiul Național Militar „Ștefan Cel Mare” | 2 | 434.40 | Red: 0  Green:154  Blue:217 |
| CABSat | Tănase Sorin-Iulian | Gura Humorului | Colegiul ”Alexandru Cel Bun” | 12 | 434.00 | Red: 237  Green:24  Blue:71 |
| TOMIS II | Băraru Ion | Constanta | Colegiul Național “Mircea Cel Bătrân” | 22 | 434.10 | Red: 128  Green:0  Blue:42 |
| Carmen Sylva 2: Operation Eagle Dive | Serbu Florin Constantin | Eforie Sud | Liceul Teoretic „Carmen Sylva” | 32 | 433.20 | Red: 255  Green:205  Blue:52 |
| SAMDID | State Gabriel | Targoviste | Colegiul Naţional ” Ienăchiţă Văcărescu” | 42 | 433.90 | Red: 7  Green:65  Blue:38 |
| Astrobotic Spirit 002 | Georgescu Octavian | Craiova | Colegiul National „Carol I” | 52 | 433.60 | Red: 102  Green:251  Blue:91 |
| LGM SAT 2 „Phoenix ” | Oneci Cristian Traian/Cucu Dorina | Timisoara | Liceul Teoretic „Grigore Moisil” | 62 | 433.70 | Red: 13  Green:45  Blue:110 |
| Miko-CanSat | Peto Maria | Sf. Gheorghe | Szekely Miko Theoretical High School Sf. Gheorghe | 72 | 434.30 | Red: 242  Green:148  Blue:91 |
| Caelum | Gherorghe Dumitrică | Bucuresti | Colegiul Naţional De Informatică "Tudor Vianu" | 82 | 433.10 | Red: 168  Green:74  Blue:168 |

# CANSAT REQUIREMENTS:

The CanSat hardware and missions must be designed to the following requirements and constraints:

[1] All the components of the CanSat must fit inside a standard soda can (115 mm height and 66 mm diameter), with the exception of the parachute. An exemption can be made for radio antennas and GPS antennas, which can be mounted externally (on the top or bottom of the can, not on the sides), based on the design.

N.B. The rocket payload area has 4.5 cm of space available per CanSat, along the can’s axial dimension (i.e. height), which must accommodate all external elements including: parachute, parachute attachment hardware, and any antennas.

[2] The antennas, transducers and other elements of the CanSat cannot extend beyond the can’s diameter until it has left the launch vehicle.

[3] The mass of the CanSat must be between 300 grams and 350 grams. CanSats that are lighter must take additional ballast with them to reach the 300 grams minimum mass limit required.

[4] Explosives, detonators, pyrotechnics, and flammable or dangerous materials are strictly forbidden. All materials used must be safe for the personnel, the equipment and the environment. Material Safety Data Sheets (MSDS) will be requested in case of doubt.

[5] The CanSat must be powered by a battery and/or solar panels. It must be possible for the systems to be switched on for four continuous hours.

[6] The battery must be easily accessible in case it has to be replaced/recharged.

[7] The CanSat must have an easily accessible master power switch.

[8] Inclusion of a retrieval system (beeper, radio beacon, GPS, etc.) is recommended.

[9] The CanSat should have a recovery system, such as a parachute, capable of being reused after launch. It is recommended to use bright coloured fabric, which will facilitate recovery of the CanSat after landing.

[10] The parachute connection must be able to withstand up to 1000 N of force. The strength of the parachute must be tested, to give confidence that the system will operate nominally.

[11] For recovery reasons, a maximum flight time of 120 seconds is recommended. If attempting a directed landing then a maximum of 170 seconds flight time is recommended.

[12] A descent rate between 8 m/s and 11 m/s is recommended for recovery reasons. In case of attempting a directed landing, a lower descent rate of 6m/s is recommended.

[13] The CanSat must be able to withstand an acceleration of up to 20 g.

[14] The total budget of the final CanSat model should not exceed 500€. Ground Stations (GS) and any related non-flying item will not be considered in the budget. More information regarding the penalties in case of exceeding the stated budget can be found in the next section.

[15] In case of sponsorship, all the items obtained should be specified in the budget with the corresponding costs on the market at that moment.

[16] The CanSat must be flight-ready upon arrival to the launch campaign. A final technical inspection of the CanSats will be done by authorised personnel before launch.