

Science Fair – 2022

The 61st Vancouver Island REGIONAL SCIENCE FAIR – VIRTUAL



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Introduction

This document is intended to provide teachers, students and parents with all of the information necessary to prepare for and participate in the Vancouver Island Regional Science Fair. **It is important that you read all of the material in this document prior to beginning your project** - violations of the rules and regulations could possibly lead to your project being disqualified. **This document is SIGNIFICANTLY DIFFERENT from prior years, so it is important that you download the current year's document if you intend to participate.**

The Vancouver Island Regional Science Fair is one of 13 Youth Science Fair of Canada sanctioned fairs held each spring in British Columbia. It is organized by a group of volunteers that comprise the Society for the Advancement of Young Scientists (SAYS) and is held in the Elliott Building at the University of Victoria. The object of the fair is to foster scientific inquiry among young people and to provide young scientists an opportunity to demonstrate their findings. Students from southern to mid-Vancouver Island areas are invited to attend. Approximately 150 students participate each year from grades 4 through 12. There are approximately 80 judges from the scientific community around Victoria (including scientists, engineers, professors, graduate students, lab instructors, and science teachers) that volunteer their time to judge the students. Each student will see 3 to 4 judges during the judging. The overall top students are selected to advance to the **Canada Wide Science Fair**. **It is the objective of the organizers and the judges that the students should enjoy and learn from every stage of doing their project and that through participation in the fair all students are successful regardless of the awards they may achieve.**

Students should attempt to begin their projects (study, experiment or innovation) in the summer or fall prior to the spring fair (leaving it until early spring will likely be too late). Teachers and

students should read the guidelines in this document prior to beginning the project to be sure that they are following the fair regulations.

Important Fair Dates - 2022

February 5 – Project Registration Opens

February 16 – Deadline for applying for a *Request for Ethics Ruling*

March 2 – Deadline for Registration

March 16 – Deadline for Fee Payment and Submission of complete Project Package

April 8 – Participants receive schedule for judge interviews & virtual platform access details
Information about the online platform to be emailed to participants

April 10 – Virtual Science Fair! Students present their projects to Judges - see note below
The online platform will be available 1 hour before scheduled check-in.

April 12 – Science Fair Celebration. Winners announced!

During judging, a parent or other adult must be present with the student. If this is not possible at home an VIRSF representative will monitor the judging. This will be verified on April 8

The VIRTUAL Science Fair will include projects from the Vancouver Island Region. Projects will be assessed by the judges on April 10 and SAYS members. Prizes will be awarded appropriately.

SAYS will nominate 7 projects to participate in the Canada-Wide Science Fair that will be hosted at Fredericton NB, May 16-20, 2022. The Canada-Wide Science Fair will also be a VIRTUAL fair.

Students will be required to pay an entrance fee of \$27.00 **per exhibit**. Follow the instructions on the VIRSF website.

Safety and Ethics – See page 7

STEM Projects and COVID-19

We enter the current STEM fair season during the highest infection rates recorded in Canada. All STEM fair projects must adhere to the safety standards in place in their province and municipality to support the health and safety of all participants, including the youth carrying out the project. All local COVID-19 protocols must be followed in detail. Projects that fail to observe COVID-19 restrictions in place at the time they are carried out are ineligible to participate in STEM fairs. It is the responsibility of the region to determine whether this is the case.

All students working on STEM fair projects are encouraged to find alternatives to using human participants where possible.

National Ethics & Safety Committee
Youth Science Canada

For more information and updates on the fair please visit our web site:

<http://www.virsf.ca>

Safety Regulations

Teacher sponsors are responsible for ensuring the safety of the exhibits and the appropriateness of the experimentation that is conducted by the student. The following is a summary of pertinent rules and regulations regarding science fair project exhibits. The VIRSF or the SFFBC committee have complete authority to request that the exhibit not be activated during the fair, and if necessary, may demand the withdrawal of an entry from the fair. If in doubt, request an ethics assessment before progressing with the project.

Fire Safety

Fire hazardous materials may not be displayed at the exhibit. No open flames or other heating devices are allowed.

Chemical Safety

If projects involved chemicals that may be harmful if spilled or tampered with (including prescription drugs or over-the-counter medication), then the display should use harmless substitutes in sealed containers or photographs of the material for display purposes only. Simulated chemicals can be used for display purposes such as table salt to represent a drug, water to represent alcohol, or molasses to simulate a petroleum product. In such cases they should be preceded by the word "simulated" with the actual contents indicated. *Again, exhibitors do not have to actually do their projects for the judges; they only have to report on it.*

Electrical Safety

- All electrical live parts must be safely contained.
- All homemade devices need proper grounding with a three-prong plug.
- X-ray equipment or any other equipment capable of emitting high energy radiation should not be operated.
- Projects involving voltages above 10kV should be considered to pose a potential hazard and cannot be activated during the fair.
- Lasers may only be operated during judging if requested by a judge. Lasers may not be operated at any other time during the fair.

Animal Experimentation

- Live vertebrate animals (mammals, birds, fish, reptiles etc.) **will not be displayed** in the Fair.
- The only parts of vertebrate animals that may be presented are those that are naturally shed or parts that are properly preserved. Examples are snake skin, hair samples, and skeletons.
- The results of experiments conducted on living vertebrates may be displayed, providing the animal care form of the registration is completed and the teacher sponsor recognizes that he/she is solely responsible for ensuring all humanitarian considerations have been applied during the work.
- No experiments deleterious to the health or physical integrity of the animals may be carried out. Chick embryo studies that involve external intervention with drugs or other chemicals may not be made.
- Detailed copies of the animal care rules may be obtained from the Fair Chairperson, or by contacting your local chapter of the SPCA for general humane treatment guidelines.

Microorganisms / Biohazards / Drugs

The following hazardous biological materials may not be displayed:

- Radioisotopes at activities above normal.
- Biological toxins
- Microorganism cultures
- Cells or tissues infected with viruses
- Cells or tissues including blood, except on sealed microscope slides which can be displayed.
- Human body fluids (blood, urine, saliva, etc.)
- Open containers of any organic matter (i.e. food)
- Illegal or street drugs are prohibited

Human Subjects

If your exhibit involves the use of volunteer human subjects in any manner (collection of information, physical testing, questionnaires, etc.) then **you must obtain their prior permission**, explaining fully what you will expect of them and how you will use the results of the tests. You must also present the results in such a way that the individual's privacy is guaranteed. No experiments, which may be deleterious to the health or physical integrity of the subjects, may be carried out.

If your project involves **Animal Experimentation, Microorganisms or Human Subjects** – you are **strongly advised** to check the *Ethics Pages* (<https://mystemspace.ca/start-a-project/safety-and-ethics/>) on the Youth Science Canada site. You must request Ethics approval by February 16. **SEE PAGE 7**

Written Report – submit by email

One PDF copy of the summary report per exhibit is to be included with the Regional Science Fair registration forms. The PDF must follow the name format “*lastname-firstname report.pdf*”.

Report Requirements

A written summary of the project intended to present a brief overview of the project and not be comprehensive.

- Must be written by the student
- Cannot exceed five (5) pages plus a cover page. *Reports in excess of this limit will be penalized.*
- Paper size = US Letter, portrait orientation, double-spaced, 12 pt. font, including all graphs, diagrams, etc.

Use a simple format including:

- **COVER PAGE** – include Project Title, Student Name(s), School Name.
Please number all your pages
- **First Page: At the top** – include the project title only
- **Pages 2-5: In the footer** – include project title only

CONTENT

- **INTRODUCTION** (stating the aims and objectives of the work)
- **PROCEDURE** (a summary of the significant materials and methods used in the study)
- **RESULTS** (a summary of the results/observations)
- **CONCLUSIONS** (a summary of the conclusions)
- **ACKNOWLEDGEMENTS** (acknowledging help received and references)

An email will be sent to assign the participants a Participant ID Number. Please use this ID number to replace the name of the participant on the virtual platform and on the 5-page report.

There is no need to include tables, graphs and raw data in the 5-page report. These items should be with the project and used in your presentation.

Project Presentation

For Judging at the 2022 fair students will be interviews via a video link. You are required to:

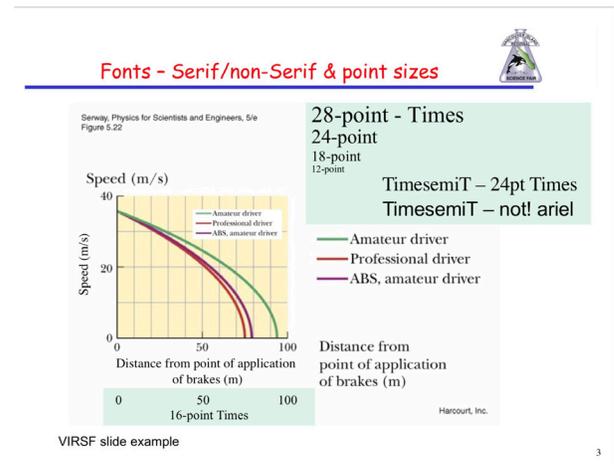
- Establish an internet connection using a COMPUTER (desktop or laptop) with a working microphone and camera. An external video connection is optional.
NOTE: the interview platform is **not compatible with mobile devices such as tablets and cell phones**.
- Produce a summary report (5-page)
- Create a slide presentation (Google Slides or Microsoft PowerPoint)
 - max 30 slides including title and references.
 - Minimum font size 24 pt.
 - Slide with References can be 12 pt.
 - Presentation to not exceed 15 minutes.

HINT: Do not put large blocks to text on your slides. A judge will not be able to read them. Make use of Bullets. These slides use 28-point, Comic Sans font. Blue is 24-point.

This is about the maximum amount of material to put on a slide.

Bad	Good
	
<h3>Major Topics Covered</h3>	<h3>Major Topics Covered</h3>
<p>The concept of Electric Flux includes Gauss' Law and its relationship with electric flux and charge in a volume. There is an equivalence of Gauss' and Coulomb' s Laws</p> <p style="text-align: center;">28pt</p> <p>Electric fields in and near conductors involve application of symmetry principles. We will study (a) Lines of charge, (b) Flat conducting and non-conducting surfaces and (c) Spherical and cylindrical surfaces.</p> <p style="text-align: center;">24pt</p>	<ul style="list-style-type: none"> • The concept of Electric Flux • Gauss' Law and its relationship with electric flux and charge in a volume <ul style="list-style-type: none"> • Equivalence of Gauss' and Coulomb' s Laws • Electric fields in and near conductors <ul style="list-style-type: none"> • Application of symmetry principles • Lines of charge • Flat conducting and non-conducting surfaces • Spherical and cylindrical surfaces <p style="text-align: center;">A mix of 24pt and 28pt fonts</p>
<p>VIRSF slide example</p> <p style="text-align: right;">2</p>	<p>VIRSF slide example</p> <p style="text-align: right;">1</p>

This slide shows some options for displaying a figure. Look at the style features to separate the graph from the background, the number of ticks and labels and the text sizes. The original Curve descriptions are off to the right side and axis labels are to the right and above the graph. A different option for displaying the labels/descriptions is shown. The axis information is still clear but arguably the curve labels are a bit too small. If you include a Figure Caption, make it in a larger font size than the axis labels. On this figure 18-20 point would be OK.



To show how font size displays at different sizes on a slide, examples from 12-point to 28-point are shown. Also, you can see the difference between the Times font (serif) and Arial font (sans-serif) are shown. Plus, there is a reminder in there to always check your spelling. (*Serif fonts have little embellishments at the tips of the letters*).

Entrance Categories

There are four grade divisions in the Regional Fair:

- Elementary:** Grades 4 and 5
Intermediate: Grades 6 and 7
Junior: Grades 8 and 9
Senior: Grades 10,11 and 12

There are six **exhibition categories** in the Vancouver Island Regional Science Fair:

- Engineering and Computer Sciences** - The design and fabrication of useful devices or the investigation of properties of materials. Software or hardware development and application.
- Life Sciences** - Aspects of life or lifestyle of non-human organism including biology, zoology and botany.
- Health Sciences** - Biomedical and/or clinical aspect of human life or lifestyle and its translation into improved health for humans, or more effective health services/products. Related to human aging, genetics, cancer research, psychology, etc. Projects involving animal research that have a direct application to humans are included in this division.
- Biotechnology** - the application of knowledge of biological systems to solve a problem, create a product or provide a service in one of three subject fields: crop development (agriculture, horticulture, silviculture-forestry), animal science (animals involved as pets, in agriculture, aquaculture, genetics), genomics and microbials.
- Earth & Environmental Science** - Planetary processes, relationships between organisms or between an organism and its environment. Topics including ecology, geology, mineralogy, oceanography, limnology, climatology, geography, pollution, resource management.
- Physical and Mathematical Sciences** - Physics, chemistry, or mathematics. May also include astronomy.

There are three **project types** (see the judging guidelines on the website for each of these):

- Experiment** - Traditionally the most common type of project. Involves scientific experiment to test a specific hypothesis in which variables are controlled.
- Innovation** - Involves the development and evaluation of new devices, models, techniques or approaches in fields such as technology, engineering, or computers (software and hardware).
- Study** - Involves the collection and analysis of data from other sources to reveal evidence of a fact, situation, or a pattern of scientific interest.

Note: Both single-student and dual-student projects are acceptable. Participants must be aware, however, that Canada Wide Science Fair regulations permit only seven students to be sent to represent this region. The Canada Wide Science Fair rules REQUIRE the participation of BOTH students. Should a dual project be ranked among the top exhibits, this would mean that less than the normal number of seven projects would be sent. We encourage that all projects submitted at the Grade seven level and up be single projects rather than dual projects.

Registration

Registration in 2022 will be online on the [Student Registration](#) page. It involves filling out and submitting an online form for VIRSF and then completing registration on the *Science Fair in a Box* website. Registration will be available from about February 5, 2022.

Once you have filled out the online form including the required signatures, you will also need to email the Registration package to the organizers. The full Registration Package must contain the following:

1. One PDF copy of the written 5-page summary report to rmmarx@uvic.ca
NOTE: The PDF file name must begin with the student's "*lastname_firstname*"
2. Signed permission and declaration forms printed as PDFs from the registration website.
3. Registration Fee (**\$27.00 per exhibit** - all grades)
 - payment online using the Home Page [DONATE Now](#) button ([VIRSF CanadaHelps](#))
 - Put the student's *lastname-firstname* in the *Write a message to us...* box

All documents must be submitted in PDF format and mailed to rmmarx@uvic.ca.

NOTE: Thursday, March 16, 2022 is the **Due date for receipt of the registration package.**

SAFETY & ETHICS

Follow the ethics guidelines for your project. Before starting a project, all students should be familiar with the Safety and Ethics guidelines.

You will find the 2 pages related to ethics on our website useful:

Safety & Ethics: https://www.virsf.ca/?page_id=204

Useful Links/Ethics: https://www.virsf.ca/?page_id=770

The following are found on the *Useful Links/Ethics* page

If your project involves human participants EVERY participant must consent. Use these forms

(1) Consent Form for human participants - [Editable](#) [Blank Form](#) [Example Form](#)

For projects involving **Animal Experimentation, Microorganisms or Human Subjects** you must make a

(2) [Request for Ethics Ruling](#) (editable form) on the *Useful Links/Ethics* page

Email ruling requests to the Fair Chair: rmmarx@uvic.ca

You must request the Ethics review by February 16, 2022

The following are useful external websites for safety and ethics guidelines at Science Fairs in Canada.

- mySTEMspace website: [Safety & Ethics](#)
- Science Fair Foundation of BC website: [Guide to Science Fair Projects](#)
- ^a Youth Science Canada website: [Archived ethics pages](#)