STUDENT INFORMATION PACKET FOR LAKOTA LOCAL SCIENCE FAIR 2019-20

REGISTRATION:

You can enter the Lakota Local Science Fair as an AS AN INDIVIDUAL or TEAM.

A Team includes a maximum of three 3 students and same grade brackets (grades 5-6), (grades7-8), grades (9-12).

If you want your project to be judged, all team members need to provide a signed consent form. **Judging is optional.**

REGISTRATION- DUE NO LATER THAN JANUARY 31, 2020 BY ONLINE SUBMISSION here: Science Fair Registration

INDIVIDUAL CONSENT FORM (**Only for Student who wants his/her project to be judged**)- DUE NO LATER THAN 5th MARCH 2020; EMAIL SCANNED COPY TO LAKOTASCIENCEFAIR@GMAIL.COM

CATEGORIES

The twenty-two categories listed below are those that will be used at Lakota Local Science Fair as following Ohio Academy of Science:

- Animal Science
- Behavioral and Social Sciences
- Biochemistry
- Biomedical and Health Sciences
- Biomedical Engineering
- Cellular and Molecular Biology
- Chemistry
- Computational Biology and Bioinformatics
- Earth and Environmental Science
- Embedded Systems
- Energy: Chemical
- Energy: Physical
- Engineering Mechanics
- Environmental Engineering
- Materials Science
- Mathematics
- Microbiology
- Physics and Astronomy
- Plant Sciences
- Robotics and Intelligent Machines

- Systems Software
- Translational Medical Science

If the project could be in multiple categories, it is best to select the primary category of your project rather than “Other.”

Projects involving human subjects, human data or human testing are limited to the following:
Use of data from preexisting, publicly available resources; Use of data from behavioral observations of unrestricted, public settings; Use of data received and recorded in an anonymous/deidentified format.
Projects involving animal subjects or animal data are limited to the following:
Use of data from preexisting, publicly available resources; Use of data from observational or behavioral projects that involve animals in their natural environment or in an existing registered laboratory .
Projects involving biological agent subjects, biological agent data or biological testing are limited to the following:
Use of data from preexisting, publicly available resources; Use of organisms recorded as being in Biosafety Level 1 (BSL1) and lower; Approved categories include; Baker’s yeast and brewer’s yeast, except when involved with DNA studies; Lactobacillus, Bacillus thuringiensis, nitrogen fixing, Oil eating bacteria, slime mold and algae eating bacteria introduced into their natural environment. Culture of bacteria or fungi within domestic areas is strictly prohibited. Culture where carried out must be in sealed petri dishes under appropriate supervision by professionals routinely engaged in biological agent culture, by participants with access to autoclaving facilities. Studies of mold growth on food items outside of a professional laboratory may only be allowed if the experiment is terminated at the first evidence of mold; Use of tissues are limited to the following: Plant tissue; Established cell and tissue cultures. **Note: The source and catalog number of all cultures should be identified in the Research Plan.**
No project may involve usage or handling of hazardous chemicals. THE USE OFCARCINOGENS OF ANY CATEGORY IS STRICTLY BANNED.

ALL ENTRIES MUST ADHERE TO THE FOLLOWING SAFETY GUIDELINES.

● If you are working in a registered laboratory, research center or school laboratory, you must follow the lab’s safety guidelines. Please provide contact/location details of the lab and the manager of the lab.
● If you think your project might involve the use of hazardous chemicals, you should not handle them yourself; your parent, teacher or adult coach should do this. Please provide the contact details of your teacher/coach in registration form
● If you are using a chemical or tissue that you think might require specific safety and health guidelines, please do your research, ask your teacher/coach for instructions, and follow all safety guidelines.

SCIENCE PROJECT STEPS

1. Choose a topic of your interest. Talk it over with your coach/parents/teacher. Do not ask to change your topic after registration is complete.
2. Get your Registration form submitted online by your parent/teacher/coach by January 31, 2020.
3. **Recommended** framework of your project:
    a. Purpose- What is it that you want to find out by doing this project? Look at any books/websites that might help you, make observations by simply looking at things, talk to people, and find out as much as possible about your topic. Write down any ideas you have and where you got them. Also, keep notes of all information needed for citing your resources.
    b. Hypothesis- What do you think is going to happen? Based on what you know or found out, what do you think the results of your experiments will be? After doing the experiments, it may turn out that your guess was wrong. It is okay if this happens.
    c. Plan- How will you test your hypothesis? What experiments will you do? How will you measure the results? Be sure to keep notes and write down everything you do and what happens. Collect all your materials. Find a place to keep things safely. Let other family members know what you are doing, so they do not throw your materials away by mistake.
    d. Experiment- Conduct your experiments. Remember, the more times you do an experiment, the more reliable and accurate the results will be. Do each experiment at least three times and get an average of the results for your graph. Use something to measure your experiments: a ruler or yardstick, a clock etc.
    e. Data- Record your data. As you do your experiments, you will want to write down what you saw or found out. Organize this information in an orderly manner. Put the date, time, and any other useful information. Write your measurements clearly.
    f. Conclusions- What did you learn from your experiments? Have you proved or disproved your hypothesis? You don't lose points if your guess turned out to be wrong.
4. You will present your project at the Science Fair with a poster display, project notebook, and oral presentation.
5. **All roughwork and calculation need to be clearly written or typed in your science project notebook-** Research projects require written documentation from the very beginning of the project starting with gathering ideas for the project, locating references, resources, the design statement or hypotheses and problems to be investigated. The information the student records in the bound notebook will be used to write the Research Plan for the project. Record the date on each page each time you add any notes to the Project Data Book/ notebook. Detailed notes are essential during the process of setting up the experiment, the conditions, variables, observations, measurements, calculations, graphing results, discussion of the conclusions and

implications. Also include other records such as photographs and discussion notes from your meetings with an advisor, teacher or mentor.

6. Prepare your titles, charts, graphs, drawings, and diagrams. Make them large, neat, and colorful.
7. Construct your science fair display. Use a cardboard trifold or poster board
8. Prepare and practice your presentation with your friends, parents, coach, teacher. Be able to tell about what you used what you did in your experiments, and what you found out. Suggested oral presentation time limit is 4-5 minutes.
9. Plan a timeline so you don't leave everything until the last minute. If you need help, tell your parents and your teacher or coach, the earlier the better.
10. Relax and enjoy yourself. You will do a GREAT job!

LOCAL SCIENCE FAIR RULES

1. Think safety always. Make sure you have recruited your adults to help you.
2. Never eat or drink during an experiment, and always keep your work area clean.
3. Wear protective goggles when doing any experiment that could lead to eye injury.
4. Do not touch, taste, or inhale chemicals or chemical solutions.
5. All experiments should be supervised by an adult.
6. Always wear gloves if you have been handling chemicals.
7. Dispose of waste properly.
8. Any project that involves animals, drugs, firearms, or explosives are NOT permitted.
9. Any project that breaks district policy, local, state, and/or federal laws are NOT permitted.
10. Be sure to let an adult know about what websites you will be visiting or have them help you search.
12. If there are dangerous aspects of your experiment, like using a sharp tool or experimenting with electricity, please have an adult help you or have them do the dangerous parts.

PROJECT PRESENTATION

The written report is a summary of everything that you did to investigate your topic.

Reports should be neatly bounded in an attractive binder. It must be typewritten.

- Typed, doubled spaced. One-inch margins, and 12 pt. Times New Roman Font
- Remember to put headings/titles on graphs/charts/tables
- Remember to insert or paste clear pictures
- Before you finalize your poster, make sure to reread, revise, and rewrite
- Recheck your calculations, spelling, and grammar.

All written reports for a science fair project should minimally include:

Title: The first page in the report should include the title of the project as well as the name and grade of the student.

Acknowledgment: Here is where you thank everyone who helped to make your project successful (including parent, neighbor, coach, teacher etc.) Everyone that you interviewed, including teachers and other experts in the field should be mentioned here.

Statement of Purpose: State the purpose of the project **in the form of a question.**

Hypothesis: You must have a hypothesis before you complete the project. A hypothesis is an educated guess about what you think will occur as a result from completing your experiment.

Research: This is the part of the report that contains all the background information that you collected about your topic. Any books or articles read from the internet/journal, authorities on the topic that you talked to, or outside materials collected should be summarized in this section. **This section should be written in your own words and NOT copied from your resources.**

Materials: This is a list of all the materials and supplies used in the project. Quantities and amounts of each should also be indicated.

Procedure: You will list and describe the steps you took to complete the project. Usually this is listed in a numbered sequence. This part shows the stages of the project so that another person can carry out the experiment.

Observations and Results: In this section, you will tell what you learned from the project. It is also IMPORTANT to include all graphs, charts, or other visual data (pictures) that helps to show your results.

Conclusion: This is a brief statement explaining why your project turned out the way it did. You should explain why the events you observed occurred. Using the word "because" is a good way to turn an observation into a conclusion. The conclusion should tell whether the hypothesis was proven or not proven. Also give the reason(s) why you chose to learn more about the subject. You could also add what you know now that you didn't know before you completed your project.

Reference Page: The bibliography should list all the printed materials the student used to carry out the project. Items should be listed in alphabetical order in a standard format. These websites are a great place to go to find the proper way of writing a bibliography. http://www.bibme.org/ , http://www.easybib.com or http://www.knightcite.com Also http://www.Icyte.com lets you "tag" information from Internet sources as you research.

ORAL PRESENTATION (4- 5 minutes)

You are the expert, and you had fun doing the project. But if you are a little nervous, we listed some helpful hints:

o Dress nicely, be polite, and speak clearly. You will show that you have confidence. Don't forget to look at your audience.
o Introduce yourself. Point to the title of your display. Tell your audience why you chose to study this.
o State your problem that you studied. Tell them about your hypothesis.
o Talk about what you learned while researching your topic.
o Talk about the sources (books, websites, and interviews) that helped you understand.
o Tell about your project and explain the steps you took to conduct your experiment. Be sure to mention all the materials involved and point out the pictures that you may have taken.
o If it applies, be sure to show them that you tested your experiment at least 3 times.
o Show them all the graphic organizers that you made, like your tables and charts. Remember to point out the labeled parts of your graph or table.
o Make sure you can read your graphs and tables. Let them know if you were surprised by the results, or if you know what would happen because you studied about it.
o Make sure you sound like an expert on your topic. Always use the appropriate vocabulary.

SCIENCE FAIR WEBSITES

1. **California State Science Fair:** Read about this science fair which has been going on since 1952! http://www.usc.edu/CSSF/
2. **Cyber Fair:** See sample fair projects, look through other student's examples, and see the steps involved in judging projects. http://www.isd77.k12.mn.us/resources/cf/welcome.html
3. **Experimental Science Projects:** Outlines steps in preparing a project (complete with an ideas list), and suggests the best ways to prepare one at different grade levels. http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html
4. **Science Buddies:** Use the topic selection wizard to help you figure out what science projects interest you most. Once you have a topic, get help doing research, setting up the experiments, and completing them. http://www.sciencebuddies.org/
5. **Science Fair Central:** Includes cool project ideas, a science fair handbook, reviews of students' experiments, and more from Discovery Channel School. http://school.discovery.com/sciencefaircentral/
6. **Science Fair Project Resource Guide:** Samples, ideas, magazines, resources, and more. Includes a list of sites that explain the Scientific Method. http://www.ipl.org/div/kidspace/projectguide/
7. **Scientific Method:** Describes the five steps of the Scientific Method. http://school.discoveryeducation.com/sciencefaircentral/Getting-Started/Investigation.html
8. **Super Science Fair Projects:** Guide to projects the six steps of the Scientific Method. http://www.super-science-fair-projects.com/
9. **What Makes a Good Science Fair Project?** Short guide written by a group of experienced judges for the California State Science Fair. http://www.usc.edu/CSSF/Resources/Good_Project.html

INDIVIDUAL CONSENT FORM

(**Only for Student who wants his/her project to be judged**)

*All parents and teacher/coach must sign and approve their child's Science Fair Project if it is to be judged.

I acknowledge that I have received and reviewed the materials for the Science Fair, and I am aware that my child wants his project to be judged by an expert.

I have approved and given permission to the child _____to participate in this year's Lakota Local Science Fair.

Student's Signature _____Date _____

Parent's Signature _____Date _____

Teacher/Coach's Signature _____Date _____

USEFUL STUDENT CHECKLIST

_____Preview Sample Projects and check several resources for project ideas
_____Read Lakota Local Science Fair Standards
_____Read Student Information Package Guide
_____Consider completion date of project DUE _____
_____Choose Individual or Team Project
_____Note the assessment criteria to be used for the project
_____Note all required elements and forms needed
_____Begin the Required Project Notebook--# pages and add dates
_____Write all notes, ideas, problems, procedures, etc. in the Project Data Book
_____Identify Problems or Questions to be researched and studied
_____Literature Review (Note taking) using a variety of resources--- minimum 5
_____Identify a documentation style that will be used throughout the project
_____Develop a Hypothesis or Design Statement
_____Secure all equipment and materials needed for implementation
_____Designate the methods and procedures to be followed
_____Formulate the Required Research Plan before experimentation begins
_____Implement Experiment or Test Prototype
_____Collect, Organize and Interpret Data
_____Prepare appropriate Graphics of the collected Data
_____Complete First Draft of Research Report
_____Construct visuals for the Report and/or Poster Display
_____Arrange Photographs for Report and/or Poster Display
_____Write the Required Abstract
_____Complete Final Draft
_____Plan Final Poster Display that meets all requirements
_____Create Oral Presentation
_____Complete all registration form and consent form for entry