**Research Plan**

***This document should be completed for ALL projects PRIOR to experimentation and must be included with all projects submitted to the Greater New Orleans Science and Engineering Fair.***

**Answer all areas.**

**RATIONALE:** Include a brief synopsis of the background that supports your research problem and explain why this research is important and if applicable, explain any societal impact of your research.

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**RESEARCH QUESTION(S):**

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**Only For Experimental Projects:**

**HYPOTHESIS:** *(statement; 3rd person)*

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**Independent Variables:** (what are you manipulating or changing?):

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**Dependent Variable:** (what are you measuring? SI units if applicable):

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**Only For Engineering Design:**

**Define a need/identify problem & target audience:**

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**State engineering design criteria:** *(requirements you specify for your design/idea that will be used to make decisions about how to build the resulting product)*

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**Expected engineering outcomes:**

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**RESEARCH METHODOLOGY:** *Detail all procedures and experimental design including methods for data collection. list safety materials such as safety goggles, parent to supervise, etc.*

***Materials: (also include safety equipment)***

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***Procedure:*** *Describe work* ***you or your team*** *do for your project. Do not include work done by mentors or others as part of larger investigations.*

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***How will you collect/measure data? Explain***

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**RISK AND SAFETY:** Identify any potential risks and safety precautions needed. **Identify HOW you will reduce risks.** List any chemicals, tools, contents under pressure, potential hazardous activities or materials, lab work, etc. Be specific.

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**For Experimental Projects: DATA ANALYSIS:** Describe the procedures you will use to analyze the data/results.

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**For ENGINEERING Projects: ANALYSIS:** Describe how you will determine if your idea/model meets your criteria. **How will you EVALUATE/determine the success of your prototype?** What will you use to determine if your expectations are met?

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**Works Cited/BIBLIOGRAPHY:** *List* ***5+ major references in proper format*** *(e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.*

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**Only FOR SPECIAL CERTIFICATION PROJECTS:** Some projects may require additional subject-specific guidelines for additional items to be included in your research plan/project summary as applicable. **Please complete the information in the appropriate sections below if needed, and delete the sections that do not apply to your project before you submit your paperwork.**

**1. HUMAN PARTICIPANTS RESEARCH:**

a. Participants: Describe age range, gender, racial/ethnic composition of participants. Identify vulnerable populations (minors, pregnant women, prisoners, mentally disabled or economically disadvantaged).

b. Recruitment: Where will you find your participants? How will they be invited to participate?

c. Methods: What will participants be asked to do? Will you use any surveys, questionnaires or tests? What is the frequency and length of time involved for each subject?

d. Risk Assessment: What are the risks or potential discomforts (physical, psychological, time involved, social, legal, etc.) to participants? How will you minimize risks? List any benefits to society or participants.

e. Protection of Privacy: Will identifiable information (e.g., names, telephone numbers, birth dates, email addresses) be collected? Will data be confidential/anonymous? If anonymous, describe how the data will be collected. If not anonymous, what procedures are in place for safeguarding confidentiality? Where will data be stored? Who will have access to the data? What will you do with the data after the study?

f. Informed Consent Process: Describe how you will inform participants about the purpose of the study, what they will be asked to do, that their participation is voluntary and they have the right to stop at any time.

**2. VERTEBRATE ANIMAL RESEARCH:**

a. Discuss potential ALTERNATIVES to vertebrate animal use and present justification for use of vertebrates.

b. Explain potential impact or contribution of this research.

c. Detail all procedures to be used, including methods used to minimize potential discomfort, distress, pain and injury to the animals and detailed chemical concentrations and drug dosages.

d. Detail animal numbers, species, strain, sex, age, source, etc., include justification of the numbers planned.

e. Describe housing and oversight of daily care

f. Discuss disposition of the animals at the termination of the study.

**3. POTENTIALLY HAZARDOUS BIOLOGICAL AGENTS RESEARCH:**

a. Give the source of the organism and describe the BSL assessment process and BSL determination.

b. Detail safety precautions and discuss methods of disposal.

**4. HAZARDOUS CHEMICALS, ACTIVITIES & DEVICES:**

Describe Risk Assessment process, supervision, safety precautions and methods of disposal.