Creating a Research Plan (Research Proposal)
Science Research-WESEF Guidelines

Purpose of a research plan:

1) Detailed guide & list of procedures to follow during your experimentation
2) Clear plan of action & list of procedures to follow so it can be reviewed & approved by SRC/IRB/IACUC personnel
3) Detailed guide & list of procedures to follow so another researcher will be able to repeat your experiment

The Research Plan/Project Summary **MUST** include the following:

a. 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.

- Should be in paragraph format
- Should contain citations to other studies that support your research idea
- Think of it is as a "mini" Introduction (1 paragraph is usually sufficient)

b. RESEARCH QUESTION(S), and/or HYPOTHESIS(ES), and/or ENGINEERING GOAL(S), and/or EXPECTED OUTCOMES: How is this based on the rationale described above?

- You do NOT need to address all of these
- 1-3 Sentences are sufficient

c. Procedures, Risk & Safety, Data Analysis, (Role of mentor/student): Describe in detail!

- Outline format/Bulleted List- DO NOT use full sentences
- Include as much detail as possible
- FUTURE TENSE- "will be". In theory, your research hasn't happen yet!

Procedures: Detail all procedures and experimental design including methods for data collection. Describe only your project. Do not include work done by mentor or others (unless it is important and required to understand your own procedures).

- Unique or common simple procedures need to be explained with details
- Lengthy procedures that are accepted and not unique can be referenced instead. For example: "Procedures will be followed as described in Smith, 2014"
- Must include the following, if applicable: **Items 1–4 below are subject-specific guidelines for additional items to be included in your research plan/project summary as applicable.**
    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?

- Include a copy of the survey that will be used

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.

- Attach a copy of an informed consent form (see sample)

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 followed, 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

- You must include a reference to an Animal Care & Use manual

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

- Students may NOT be involved in the euthanasia of the animals

3. **Potentially hazardous biological agents research:**
   a. Give source of the organism and describe 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. Include an appropriate reference

Risk and Safety: Identify any potential risks and safety precautions needed.

Data Analysis: Describe the procedures you will use to analyze the data/results. Be specific!

Role of Mentor/Student: Indicate the steps your mentor will be responsible for and what steps you will be responsible for. This can be done via a comparison table, or written in parenthesis after each step, such as "All hazardous materials will be disposed of appropriately (mentor)"

d. BIBLIOGRAPHY: List major references (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.

- Alphabetical by author's last names
- Include all references mentioned in rationale & body of research plan
- Same format as you would use in your paper, board, and PowerPoint (usually APA)