Research Plan Instructions

A complete typed research plan is required and must accompany Checklist for Student (1A)

The research plan for ALL projects is to include the following:

A. Question or Problem being addressed
B. Hypothesis/Engineering Goals
C. Description in detail of method or procedures (The following are important and key items that should be included when formulating ANY AND ALL research plans.)
   - Procedures: Detail all procedures and experimental design to be used for data collection
   - Data Analysis: Describe the procedures you will use to analyze the data that answer research question or hypothesis
D. Bibliography: List at five (5) 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.
   - Choose one style and use it consistently to reference the literature used in the research plan

Items 1-4 below are guidelines to be followed when applicable:

1. Human subjects research (See instructions on p.13 of the International Rules):
   - Subjects. Describe who will participate in your study (age range, gender, racial/ethnic composition). Identify any vulnerable populations (minors, pregnant women, mentally disabled or economically disadvantaged).
   - Recruitment. Where will you find your subjects? How will they be invited to participate?
   - 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?
   - Risks. What are the risks or potential discomforts (physical, psychological, time involved, social, legal etc) to participants? How will you minimize the risks?
   - Benefits. List any benefits to society or each participant.
   - Protection of Privacy. Will any identifiable information (e.g. names, telephone numbers, birthdates, email addresses) be collected? Will data be confidential or anonymous? If anonymous, describe how the data will be collected anonymously. If not anonymous, what procedures are in place for safeguarding confidentiality? Where will the data be stored? Who will have access to the data? What will you do with the data at the end of the study?
   - 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 (See instructions on p.17 of the International Rules):
   - Briefly discuss POTENTIAL ALTERNATIVES and present a detailed justification for use of vertebrate animals
• Explain potential impact or contribution this research may have
• Detail all procedures to be used
  • Include methods used to minimize potential discomfort, distress, pain and injury to the animals during the course of experimentation
  • Detailed chemical concentrations and drug dosages
• Detail animal numbers, species, strain, sex, age, etc.
  • Include justification of the numbers planned for the research
• Describe housing and oversight of daily care
• Discuss disposition of the animals at the termination of the study

3. **Potentially Hazardous Biological Agents** (See instructions on p.21 of the International Rules):
   • Describe Biosafety Level Assessment process and resultant BSL determination
   • Give source of agent, source of specific cell line, etc.
   • Detail safety precautions
   • Discuss methods of disposal

4. **Hazardous Chemicals, Activities & Devices** (See instructions on p.25 of the International Rules):
   • Describe Risk Assessment process and results
   • Detail chemical concentrations and drugs dosages
   • Describe safety precautions to minimize risk
   • Discuss methods of disposal