Project proposal (20 points)

Write a one page proposal of your experiment that includes:

- Brief introduction to the experiment including what others have done previously with the same kind of experiment. Include an introduction to the importance of the experiment (Why are you passionate about this?) It never hurts to over-explain why you are doing this experiment.
- One hypothesis that is properly formatted to the lab procedure. The hypothesis is based on previous observations or research that serves as the basis for your prediction. While the definition of hypothesis is "an educated guess" this section only requires you to include the information you are basing your prediction upon.
- One or two predictions about the data or outcome of the experiment. The predictions should also be correctly formatted "if…then" statements with properties of the hypothesis included.
- A clearly controlled variable that will be tested. When performing an experiment, there is always a variable that is being controlled. What variable will you be controlling in this experiment and how does it relate to the hypothesis/predictions?
- Projected materials needed and a brief description of the methods – what do you need in order to perform this experiment?

Grading Rubric:

	Excellent (5 points)	Great (3 - 4 points)	Good (2 points)	Attempt (0-1 point)
Introduction	The introduction has a clear importance backed by previous research or previous knowledge. The introduction fully explains the topic	The introduction contains the importance of the experiment backed by previous knowledge and experience but may not be explained clearly and fully	The introduction mentions the importance of the experiment with little to no support from outside sources or knowledge and is somewhat poorly explained.	The introduction mentions importance with no explanation or outside sources or materials.
Hypothesis and predictions	Hypothesis and predictions are related to each other and formatted correctly.	Hypothesis and predictions are related to each other with some formatting errors	Hypothesis and predictions are loosely related with moderate formatting errors	Hypothesis and predictions are included but not clearly related or formatted
Controlled variable	The variable the student chooses to test is reasonable and feasible for	The variable the student chooses to test is reasonable and somewhat	The variable the student chooses to test is reasonable but not really feasible.	The variable the student chooses to test is neither reasonable nor feasible. The

	experimentation. The variable relates to the hypothesis and prediction and is considerably different from other experiments	feasible. The variables somewhat relate to the hypothesis and prediction but has been done before in many other previous experiments.	The variables are unrelated to the hypothesis and prediction and had been done before in many other previous experiments.	variables are unrelated to the hypothesis and prediction and have been done many times before.
Materials and Methods	The materials needed for the experiment are feasible and related to the experiment. The methods are feasible and relevant to the experiment. The methods take into consideration the tested variable and are unique.	The materials needed for the experiment are feasible and related to the experiment. The methods are relevant to the experiment but somewhat excessive or incomplete.	The materials needed for the experiment are somewhat feasible and fully related to the experiment. The methods are excessive or incomplete and students neither have nor considered any alternative methods.	The materials needed for the experiment are not very feasible or related to the experiment. The methods are incomplete.

Example: (This student received 18 out of 20 points for this assignment)

What is the effect of garlic on repelling fleas and ticks?

Introduction:

Fleas and ticks are pests that are known to carry harmful diseases and have caused mass epidemics such as the Bubonic plague. These insects are also known to cause discomfort and itchy bumps when they bite their hosts and are hard to get rid of once infested. There are currently several products on the market that are used to prevent domesticated animals from becoming hosts to fleas and ticks. These products include oral medication, topical medication and flea collars. While effective, these products are often expensive and can cause the host (dog or animal) to suffer from repeated exposure to harsh medications. This experiment will test the alternative methods of pest prevention.

Previous studies from Gareth M. Prowse, Tamara S. Galloway and Andrew Foggo on the insecticidal effects of garlic juice show us that fleas and ticks bite less often when the host has a high garlic and onion diet. The pungent oils in these foods makes the blood bitter and sour to the pest and prevents them from biting and inhabiting the host.

Hypothesis: Animals that have a high garlic and onion diet are less likely to be bitten by fleas than animals with a low garlic and onion diet. Also, the natural effects of the garlic will be less harmful to animals than medications.

Prediction: If an animal is fed one teaspoon of garlic per day for two weeks, fleas will be eliminated at the same rate as a topical medication.

Variable being controlled: The controlled variable will be the amount of garlic given to the dog = 1 teaspoon a day for two weeks. Also, one dog will be left untreated.

Materials needed:

- Dogs
- Fleas
- Wash bins
- Dogfood
- Garlic powder
- Topical medicine (oral medicine or flea collar if topical not available)
- Blue dawn shampoo (or flea and tick shampoo)

Methods:

1. Infect dogs with fleas or find dogs infected with fleas already

2. Add one teaspoon of garlic powder to each meal. Dogs will be served twice a day.

3. Wash the dog with blue dawn soap every two days and collect the bathwater.

4. Count the fleas in the bathwater