



Clarkson™



## Clarkson Discovery Challenge - *What will you discover?*

The discovery and creation of new knowledge or information is at the heart of scientific research. An important part of the IMPETUS School Year Program is the **Clarkson Discovery Challenge (CDC)**. The CDC encourages IMPETUS students to investigate real-world issues and showcase their findings at a Poster Reception at the December Campus Visit at Clarkson University.

ALL research projects will receive *prizes for participation*. The top three research teams will be invited to submit their research for participation at the statewide STEP conference in Albany\*. Each team is limited to 3 people. Each member of the top 3 teams will also **win a \$250 Amazon/Visa gift card for 1<sup>st</sup> place, \$100 for second and \$50 for third.**

Below is a list of open-ended questions corresponding to topics in the Social Sciences, Sustainability, and Biodiversity. Some of these questions have multiple parts to give YOU ideas of questions that may be asked; please feel free to dig deeper into just one of those parts as your discovery challenge. The ultimate goal is for YOU to uncover some new knowledge about emerging and important real-world issues.

### **Social Sciences** (The scientific study of human society and social relationships)

- 1) Tobacco products have some health benefits however the many negative side effects to the user and those around far outweigh the positive health benefits of tobacco. If those products were removed from stores, what would the effect be on the economy? You may want to not only consider the production and purchasing of those products but also the impact smoking has on the cost of health care.
- 2) What are the different health habits of people? Can exercising every day make up the negative health benefits of sitting for 8 hours a day? Can exercising make up for sleeping poorly? How about for eating poorly? Can eating well make up for lack of exercise? How about for sleeping poorly? Is there an ideal way to live a healthy life?
- 3) Energy drinks and caffeinated beverages have gained popularity with students over the last years. How prominent is the use of these products in your school and why? Is there a certain type of person or social group that is more likely to consume these? How can we determine if there is any relationship between academic or athletic performance and the use of these drinks? Should the use of these products be regulated? Are there any unintended side effects? How knowledgeable are students on the negative side effects of energy drinks and other caffeinated beverages?

### **Sustainability** (Capable of being continued with minimal long-term effect on the environment)

- 1) Paper or plastic? Which has a better economic impact and which has a better environmental impact?
- 2) How much waste is generated by your school? Choose a specific type of waste and propose a method to decrease the amount. Assess the cost of implementation and outcomes from your plan.

3) Should rock salt be used to help make icy roads safer or should a substitute such as dirt be used instead?

**Biodiversity** (The variety of life in the world or in a particular habitat or ecosystem)

- 1) What animals and breeds of those animals are most likely to end up in an animal shelter?  
What can be done to lower this number? Support your answer with a plan and assess the challenges and benefits of your approach.
- 2) Will the Bassmaster Fishing Tournament as well as other fishing that happens locally affect the area's bass population or the rest of the aquatic ecosystem in the area?
- 3) Much controversy surrounds the idea of genetically modified foods (both animal and plant products). Explain the trade-offs (pros and cons) in modifying natural foods. Devise a way to assess whether a food product is better or worse if it is genetically modified and demonstrate your plan on a set of common food items.

**Have a different topic you would like to explore instead? No problem — talk with your Clarkson Student Mentor, your teacher, or email your ideas to Professor Schreiber at [aschreiber@stlawu.edu](mailto:aschreiber@stlawu.edu). Let's discuss possible discovery questions that interest YOU.**

**YOU SHOULD DO THE CDC → research looks AMAZING on a college application!**

### **Getting Started**

To help get you started with your CDC project we have put together the *IMPETUS Guide to Research Experimentation and Poster Presentations*. (You have a copy on Moodle.) This guide contains information on how to choose a research topic, compose a good research question, formulate a hypothesis, analyze data, and draw conclusions. The IMPETUS team is here to help you through the research process. We will help you modify and improve your research question, design your study, collect data, analyze data, draw conclusions, and communicate results.

**\*Clarkson's IMPETUS program will fund the winning students' trip to the conference Statewide Student STEP conference held in Albany.**