Term	Course	Contract Title	Description
Spring 2020	BIOL 3216K	The Relationship between the Nucleoid and Chloroplast Genomes of a Cultivated Plant	When crops are cultivated to provide specific benefits such as drought resistance and pesticide resistance, it is possible to see these changes in the nucleoid genome. Through a process called DNA barcoding, it is possible to observe the chloroplast DNA of the plant in question. Given that it would be difficult to attain the species needed to work with crops in person, I will be downloading the genomes for these various plants through a website by the name of GenBank, as recommended by Dr. Burgess. For my honor's contract I would like to use barcoding to compare the chloroplast DNA of a wild plant and a related cultivated species, in order to determine if the changes in the nucleoid genome of the cultivated plant coincided with any changes in the chloroplast DNA of the same plant in comparison to the wild type. I will then write a paper/build a poster on my research and findings to be presented at the next Tower Day.
Spring 2020	BIOL 2222K	Anatomy 2 Lab Study Guide	I will create an all inclusive study guide for each chapter of Dr. Zuiderveen's Anatomy & Physiology 2 Lab. This study guide will be in PowerPoint format and it will incorporate visuals such as pictures, videos, and possibly links. I will be sure to base the study guide solely off of what Dr. Zuiderveen covers each week in lab, focusing exactly what he chooses to focus on. At the end of the semester, I will upload this in-depth study guide to two flash drives. One for him to utilize and offer to each Anatomy & Physiology 2 class he teaches in the future, and one for my own personal benefit. This project will have a positive impact on not only myself, but it also has potential to provide a very efficient study tool that is specific to the content that is covered in Anatomy 2.
Spring 2020	BIOL 3216K	Fishy Business: DNA Barcoding of Commercial Fish	This project will be conducted in response to the “seafood fraud” phenomenon in Canada. It has been discovered that there has been a widespread mislabeling of seafood in Canadian restaurants and stores. For this project, I will be testing the DNA of fish from local markets using DNA barcoding and comparing the results to known genomes of that species. The purpose of this experiment is to use the DNA results of these fish to determine if the fish being sold in local markets are actually what their labels claim they are.
Spring 2020	BIOL 2222K	The Impact and Potential Treatments of 2019-nCoV and Related Coronaviruses	For this Honors contract, I will be synthesizing a literature review on the 2019 novel Coronavirus and other similar coronaviruses. Within the paper, I will detail the identification process of coronaviruses and how it may vary between species, the effects of the viruses on mammalian organ systems and health as a whole, any problems unique to different coronaviruses, and which individuals are most at risk of infection. Additionally, I will discuss existing treatments and isolation practices for coronaviruses, including ones that are being crafted or may be effective at handling 2019-nCoV. In particular, I will attempt to differentiate practices from various cultures and ethnic groups as well as discuss the potential outcomes of introducing them to the United States. Additionally, I will look into the potential underreporting of 2019-nCoV cases, comparing the timelines of it and the other coronaviruses.
Spring 2020	BIOL 3216K	The Genetic Analysis of Local Fungi Samples	Through the course of this project, I, along with a partner in my genetics class will collect local fungi samples and perform DNA barcoding in order to compare DNA sequences of different species. Do to their unique place in the ecosystem’s around the globe, fungi have an important role in many biological processes. Although fungi are extremely prevalent throughout the environment, they are often understudied. The goal of my project is to fill in the missing gaps of our knowledge about various fungal species and groups. I will go about this by first collecting a specific fungal species, isolating its DNA, and then use a Polymerase Chain Reaction (PCR) to amplify the DNA and sequence it. I then will compare my findings with my partner’s results.

Spring 2020	BIOL 3216K	Examining Local Fungal Species' Genetic Constitution	For my project, I along with another student will be analyzing DNA sequences by collecting local fungi species. Fungi, do to their role as decomposers, play an important role in ecosystems throughout various environments. Fungi have been heavily understudied, and through this project, I hope to compensate for this lack of research. By isolating DNA of various regional fungal species, and then using a PCR to sequence the DNA, I can determine their relation to other species. After sequencing the DNA of my particular species, I will then compare its relation to my partner's fungal species.
Spring 2020	BIOL 3216K	A study of premature babies development	In this honors contract, I will be discussing a protein p38 mapk and how it has been related to stress that triggers moms to not being able to have a full term baby. Also, I will discuss long term effects on premature babies and how babies that are not full term are affected due their inability to develop properly. I will be researching on what diseases, mental incapabilities, social disabilities that premature babies are more prone to doing.