Contract #	Term	Course	Contract Title	Contract Description
303017	Fall 2015	MATH-5135U	Half Domination Arrangements in Graphs Associated with Archimedean Solids	This mathematical research explores half domination arrangements in the 5 Platonic and 13 Archimedean Solids. The goal in half domination is to color the faces in such a way that a maximum number of "neighbors", or polygons adjacent to a particular polygon, are colored the same. The number of colors to be used is two, say blue and yellow, and we want to maximize the number of blue faces. The maximum number of neighboring faces of a blue face that can be colored blue is at most half of their number. Using the Integer Linear Programming solver (IPSolve) to determine optimum arrangements gives us a starting point. The graphs will then be colored to represent the arrangement indicated by the binary output from the solution. This information will assist in the formulation of proofs for each solid that confirm the maximized arrangement theorized by the linear problem solver. Other areas of interest are symmetry groups within the maximum arrangements, and further research will focus on identifying possible symmetries, if they exist.
304011	Fall 2015	MATH-5175U	Mathematical Statistics	This project is designed to help the student develop a deeper understanding of the following concepts from Mathematical Statistics. 1. Sampling distributions and the distributions of test statistics derived from them. 2. The concepts and properties of unbiased estimators and how they may be derived. 3. The concepts and theorems related to interval estimation and applied problems. 4. The concepts, theorems and procedures related to hypothesis testing and applied problems. These goals will be accomplished through the completion of a Webassign course utilizing a textbook with more depth than the required text for Math 5175 80358.