

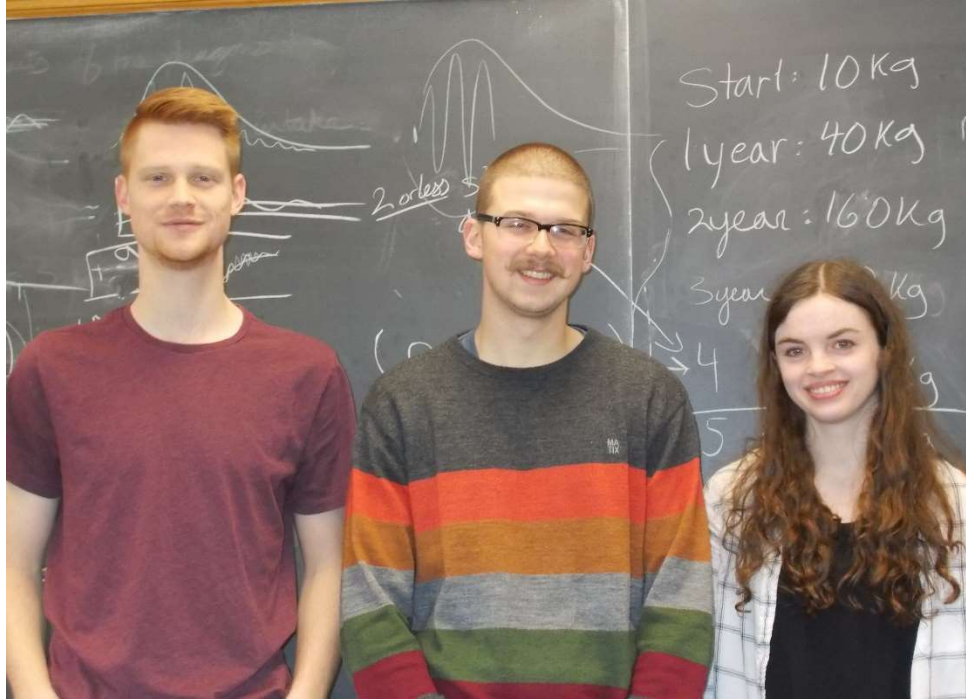
## **SDSM&T Students Learn to Model Environmental Impact in International Contest**

The weekend of January 25, 2019 marked the 35<sup>th</sup> annual Mathematical Contest in Modeling (MCM). In this contest, teams of three undergraduate students are given open-ended complex problems where they are required to: research the topic, develop a mathematical model, use a computer to simulate the model, and write a technical report. The truly amazing part of this contest is that the competitors have only a weekend to complete their work.

The team from SDSM&T decided to tackle problem A, which posed a problem of how to measure the environmental impact of an organism on the surrounding environment. To keep things entertaining, the contest organizers posed an environmental impact study relating to the dragons from the game of thrones. The student teams were asked to model the environmental impact of the dragons on their environment and needed to include the details regarding: the caloric intake required to maintain the activity of the dragons, the energy expenditures the dragons would be required based on the ambient temperatures of the environment, how much area would be needed to support three dragons, what resources would be required to sustain the dragon related activities, and what impacts would occur with the dragons start to migrate.

The teams were asked to write a complete analysis, but also formulate a summary that could be used to highlight the necessary information to a general audience. The subject of this contest problem is fictional, but the mission is to formulate a realistic impact study with the same care and analysis that would be brought to a modern setting. Contest judges would be looking for sound mathematical methods and careful scientific analysis.

This is a great illustration of the challenge that occurs when students work on an open-ended question that allows students to: apply creative solutions to a problem, reflect on their work, and critically analyze the results. This type of experience helps develop the skills that many employers are looking for and it is a great way for students to discover what they can accomplish with the math content they learn in their classes.



**2019 Math Modeling Team: (left to right) Matthew Phillips, Nicholas Chmielewski, and Gabrielle Smith**

The Mathematical Modeling Contest in Modeling is an annual competition that involves thousands of teams from hundreds of schools, colleges, and universities from around the world.

To find out more about this contest then please see the contest website at

<http://www.comap.com/undergraduate/contests/mcm/>