Mathematics and Computer Science

Moderator: Ryan D. Fox, Ph.D.

April 20, 2017
McWhorter Hall, Room 429

7:00 p.m. – 7:15 p.m.

Using Mathematical Modeling to Predict Belmont's Future Enrollment

Reed Priest & Mary Puls
Faculty Advisor: Daniel Biles, Ph.D.

Belmont University is in a stage of rapid development. With this growth, some dorm rooms now house three residents, a new dorm room is currently in construction, and off-campus housing remains ever-popular. To account for this change, we have applied predictive analytics to estimate the upcoming student population.

To estimate this upcoming student population, we started using the following predictor variables: percent increase of enrollment, percent admitted, cost, percent male student population, SAT score of admitted students and Nashville population. These were narrowed to the most influential predictor variables. Using these predictor variables, we calculated the most accurate model to predict Belmont's future enrollment, a nonlinear model using K-nearest neighbors.

7:15 p.m. – 7:30 p.m.

Murder or Matrimony? Predicting the Success of a Relationship Based on the First Date

Kailee Gerzema and Aubree Darcy
Faculty Advisor: Daniel Biles, Ph.D.

The world of dating is mysterious and unpredictable. How successful was your most recent first date? Have you ever wanted to manipulate how your first date will go? We set out to "play Cupid" with R through our Predictive Analytics course. By surveying our peers about their most recent relationship, we were able to collect data and create linear and non-linear models. We asked questions such as, "How did you meet?", "Where did you go on your first date?", and "How long did you know each other before going out?"

This talk will describe our two models and what we learned about predicting success of a relationship. Can relationships be modeled through mathematics? Or will dating forever be unpredictable?

7:30 p.m. – 7:45 p.m.

Sabermetrics: The Exploration of Baseball Through Statistics

Adrienne Franke
Faculty Advisor: Dr. Daniel Biles

Throughout this semester, we have explored various questions in the field of baseball and studied data to try to find the answers. Specifically, we have examined rookie pitcher strikeout percentages, managers who were players and their resulting coaching statistics, Mark McGwire's steroid usage, and other steroid use questions.