

# Research Faculty Interactions

## Math 112L

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### **Instructor Information:**

Hubert Bray, Professor of Mathematics and Physics, Duke University  
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### **Course Information:**

Class meets 11:45 a.m. to 1 p.m., Thursdays in French Science 2231.

### **Office Hours:**

Mondays 2:40 – 3:10 and Wednesdays 2:40 – 4:10. You may also schedule a meeting by email.

### **Objectives:**

Calculus is not the end of mathematics – in fact, it is closer to being a beginning. In these discussions, we will explore the many ways that mathematics may be used to understand the world, from topics in economics including the Kelly Criterion and Game Theory, to topics in political science including Duverger's Law and preferential ballot elections. As time permits, we will also survey special and general relativity, including gravity, the Big Bang, black holes, dark energy, the accelerating expanding universe, and the mystery of dark matter.

Since this material is not a prerequisite for other classes, we will take the time to enjoy these topics, focusing on what is amazing and exciting rather than problems that can be tested. While there will be quizzes to make sure everyone participates and pays attention, none of this material will appear on the final exam.

### **Homework:**

Occasionally, problems will be assigned in class. Students will also conduct and analyze surveys. Students will analyze their surveys using [www.wevotehere.org](http://www.wevotehere.org) (click on "Create a New Election" and then "Spreadsheet Election" and then follow the instructions).

### **Grading:**

10% Five minute quizzes (every Thursday in class – attendance required)  
10% Homework and assignments

The other 80% of your grade in Math 112L is based on your calculus work with Professor Akin.

**Join Professor Bray for lunch after class on Thursdays! A sign up sheet will be circulated.**