INDE 597: Applied Discrete Optimization

Course Description
This course will cover solution strategies based on integer programming and combinatorial optimization for various practical problems. The course will also cover some techniques from data science and machine learning. The tractability of various problems will be explored from an algorithmic and computational perspective.

Time and Room
Class meets Monday and Wednesday, 4:00 - 5:15pm in Herzstein Hall 211.

Instructor
Boris Brimkov
Office: Duncan Hall 3018
Office Hours: Wednesday 1:00-3:00 and by appointment
email: boris.brimkov@rice.edu

Textbook (not required)
L. Wolsey. Integer programming, Wiley, 1998

Course Website
Visit www.caam.rice.edu/~bb19/teaching.html for assignments and other pertinent information.

Grading Policy
homework – 60%
group project – 30%
class participation – 10%

Course Outline
Integer programming techniques	(5-7 weeks)
Graph theory and combinatorial algorithms	(2-3 weeks)
Complexity theory / algorithm analysis	(2-3 weeks)
Data science / machine learning	(2-3 weeks)
Advanced and modern topics	(if time allows)

Groups
Students will divide into groups of 3-5 to work together on homework and a group project.

Homework Policy

Homework can be discussed within the groups, but each student must turn in a separate homework individually. Outside references, including textbooks, websites, and articles, may be used with proper citation. Sometimes, hints might be posted on the course website. Homework must be turned in by the beginning of class on the day it is due. No late assignments accepted for any reason. If a student requests a problem to be re-graded, I reserve the right to re-grade their entire homework.

Americans with Disabilities Act Statement

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with the instructor during the first two weeks of class. All discussions will remain as confidential as possible. Students with disabilities will need to also contact Disability Support Services in the Allen Center.