RICE SOCIAL SCIENCES
Department of Sport Management

INSTRUCTOR CONTACT INFORMATION

Instructor: Scott Powers
Office: Kraft 246
Email: scott.powers@rice.edu
Office Hours: 12:00 – 12:50 p.m. Tue

REQUIRED TEXTS AND MATERIALS

Class Website: canvas.rice.edu
Required Text: All readings will be made available on Canvas.
Required Material: Bring your laptop to class every day, but please leave your laptop packed away when we are not working on coding exercises.

TOPICS

The general flow is that we will alternate between (a) discussing math/models using a whiteboard and (b) implementing these concepts in code. The course is divided into 4 units, each approximately 3 weeks:

- Unit 1: Measuring Batting Performance
  Pythagorean Formula, Base-Out Run Expectancy and Linear Weights, Batted Ball Outcome Model

- Unit 2: Measuring Pitching Performance
  BABIP/FIP/DIPS, Pitch-Level Analysis, Pitch Outcome Modeling

- Unit 3: Advanced Topics
  "Stuff", Fielding and Baserunning, Projections

- Unit 4: Practicum
  Guest Speakers, Student Projects

COURSE OBJECTIVES AND LEARNING OUTCOMES

After successfully completing this course, you will be able to:

- Separate signal from noise in baseball performance data.

- Design and calculate your own WAR metric using R and publicly available MLB data.

- Describe applications of analytics for supporting in-game strategy and player development.

- Identify an interesting research problem in baseball, solve it with data, and present your solution.

How Your Grade Is Determined

Sport analytics is a demanding and highly competitive field. This class aims to provide the tough but honest feedback that you will need to succeed in it. Note that the points below sum approximately (but not exactly) to 100. Your grade is based on your percentage earned of available points.

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& & & [93\%, \infty) & \to & A & [90\%, 93\%) & \to & A-\\
[87\%, 90\%) & \to & B+ & [83\%, 87\%) & \to & B & [80\%, 83\%) & \to & B-\\
[77\%, 80\%) & \to & C+ & [73\%, 77\%) & \to & C & [70\%, 73\%) & \to & C-\\
[67\%, 70\%) & \to & D+ & [63\%, 67\%) & \to & D & [60\%, 63\%) & \to & D-\\
& & & [0\%, 60\%) & \to & F
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Assignments. (45pts) There are 3 individual assignments, each worth 15pts. You are encouraged to help each other, but your submission must reflect work you have done yourself. Assignments will be graded anonymously, so please remove any personally identifying information from your submission. The expected completion time for each assignment is 15 hours.

Project. (45pts) This is a project-based course, and the project you build in stages over the course of the semester will determine a large chunk of your grade. You are encouraged to work with a partner on the project (no more than 2 students per team), but you may work individually if you wish.

- Project #0 (0pts): Registration — expected hours: 0
- Project #1 (5pts): Proposal — expected hours: 5
- Project #2 (10pts): Abstract — expected hours: 10
- Project #3 (10pts): Presentation — expected hours: 10
- Project #4 (20pts): Paper — expected hours: 20

Attendance. (1pt per class) Showing up is a requirement for most jobs in sport analytics. In this class, you are expected to show up and engage in discussions, which are part of the learning experience. We will keep attendance and collect feedback using exit tickets at the end of almost every class although there may be a few days we skip this (these days will not be counted toward your attendance grade).

Late Work. You may submit late work subject to a 10% score deduction for each late day.

Absence Policy. If you notify me of your absence before the beginning of class, you will receive an opportunity to make up your absence.

Experiential Learning

MLB Club Interview Assessment. If you are asked to complete a modeling assessment during an interview process with an MLB club (see https://saberpowers.github.io/jobs), you are invited to substitute your work on that assessment in place of any individual homework assignment if: (1) the assessment involves coding, not just a questionnaire; (2) you notify me of this substitution before the deadline of the substituted assignment; and (3) you submit the prompt and your work on Canvas so that I may assess your work.

MLB Club Project Partnership. This semester, we will partner with one more more MLB clubs to provide mentorship on your projects. You are expected to coordinate with your mentor(s) to schedule a 30-minute meeting after each stage of your project (five total meetings) to solicit their feedback on your work.

Tentative Schedule

This schedule is subject to change with appropriate notice.

Assignment Due	Date	Lesson Plan
	Aug 25	Pythagorean Formula
	Sep 1	NO CLASS (LABOR DAY)
	Sep 8	Base-Out Run Expectancy and Linear Weights
	Sep 15	Batted Ball Outcome Model
Assignment #1: Batted Ball Outcome Model	Sep 22	BABIP, FIP and DIPS
	Sep 29	Pitch-Level Analysis
	Oct 6	Pitch Outcome Modeling
Assignment #2: Pitch Outcome Model*	Oct 13	NO CLASS (MIDTERM RECESS)
Project #0: Registration	Oct 20	"Stuff"
	Oct 27	Fielding and Baserunning
Project #1: Proposal	Nov 3	Projections
Assignment #3: Projections	Nov 10	Project Working Session
Project #2: Abstract	Nov 17	Guest Speakers?
	Nov 24	Guest Speakers?
Project #3: Presentation	Dec 1	Student Presentations
Project #4: Paper	Dec 15	

*Assignment #2: Pitch Outcome Model may be submitted as late as Oct 20 without penalty.

Rice Honor Code

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

AI Policy. You are allowed (and even encouraged) to use AI as a tool for developing code (attribution in this case is not necessary). Please do not use AI to generate any part of your writeups.

Disability Resource Center

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with the Disability Resource Center (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Mental Health Policy

The wellbeing and mental health of students is important; if you are having trouble completing your coursework, please reach out to the Wellbeing and Counseling Center. Rice University provides cost-free mental health services through the Wellbeing and Counseling Center to help you manage personal challenges that threaten your personal or academic well-being. If you believe you are experiencing unusual amounts of stress, sadness, or anxiety, the Student Wellbeing Office or the Rice Counseling Center may be able to assist you. The Wellbeing and Counseling Center is located in the Gibbs Wellness Center and can be reached at 713-348-3311 (available 24/7).

Title IX Responsible Employee Notification

At Rice University, unlawful discrimination in any form, including sexual misconduct, is prohibited under Rice Policy on Harassment and Sexual Harassment (Policy 830) and the Student Code of Conduct.

Please be aware that all employees of Rice University are "mandatory reporters", which means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I must share that information with the Title IX Coordinator.

Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

To report sexual harassment, please contact the Title IX Coordinator at titleix@rice.edu. To explore supportive measures and other resources that are available to you, please visit the Office if Interpersonal Misconduct Prevention and Support at safe.rice.edu.

This syllabus is only a guide for the course and is subject to change with advance notice.