

STAT 461X | Sports Analytics

3 credits

Prerequisites: One of the following STAT 301, STAT 326, STAT 401, or STAT 587.

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TA: TBD

Tech Support Email: elotech@iastate.edu. Go to [Canvas Help](#) for more information on finding help with Canvas.

Course Catalog Description

Sports analytics refers to the use of statistical, quantitative, and graphical techniques for analysis of sports data. The course will focus on head-to-head sports and the calculation of relevant statistics, e.g., plus-minus and adjusted plus-minus. Rating systems and their relationship to statistical models and estimation of these ratings will be described.

Learning Outcomes

1. Students will be able to classify head-to-head vs point- or time-based competitions.
2. Students will be able to construct visualizations to understand head-to-head competitions.
3. Students will be able to calculate head-to-head statistics, e.g. plus-minus and adjusted plus-minus.
4. Students will be able to construct estimable models for head-to-head competitions.
5. Students will be able to analyze data using head-to-head models to construct a team or player rating system.

Course Format

On campus. Meeting times TBD.

Required Technology

1. Access to Iowa State University computer system and your Learning Management System (Canvas etc.).
2. Access to a laptop capable of installing the statistical software R.

Required Texts

Required textbooks are

- Analytic Methods in Sports (2nd edition) by Thomas Severini. Chapman and Hall/CRC

- Regression Models for Data Science in R by Brian Caffo. Available for free or by donation at <https://leanpub.com/regmods>.
- R for Data Science by Hadley Wickham and Garrett Grolemund. Available for free at <https://r4ds.had.co.nz/>.

Assignments and Grading

Grade Distribution

Assessments	Percentage
Sports data collection	5%
Homework assignments	20%
Midterm exams	50%
Final project	25%
Total	100%

Grading Scale

Letter Grade	Range	Letter Grade	Range
A	93-100	A-	90-92
B+	87-89	B	83-86
B-	80-82	C+	77-79
C	74-76	C-	70-73
D+	67-69	D	64-66
D-	60-63	F	59 and below

Academic Misconduct

All acts of dishonesty in any work constitute academic misconduct. Online courses are no exception. The Student Disciplinary Regulations (<http://policy.iastate.edu/policy/SDR>) will be followed in the event of academic misconduct. Depending on the act, a student could receive an F grade on the test/assignment, F grade for the course, and could be suspended or expelled from the University. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing attempt to help another student commit an act of academic dishonesty. See more information at [Academic/Research Misconduct for Students](#). Academic dishonesty includes, but is not limited to each of the following acts when performed in any type of academic or academically related matter, exercise, or activity

Plagiarism

Plagiarism is the act of representing directly or indirectly another person's work as your own. It can involve presenting someone's speech, wholly or partially, as your; quoting without acknowledging the true source of the quoted material; copying and handing in another person's work with your name on it; and similar infractions. Even indirect quotations, paraphrasing, etc., can be considered plagiarism unless sources are properly cited. Plagiarism will not be tolerated, and students could receive an F grade on the

test/assignment or an F grade for the course. The Iowa State University policy for academic misconduct can be found in the Student Disciplinary Regulations.

Obtaining Unauthorized Information

Information is obtained dishonestly, for example, by copying graded homework assignments from another student, by working with another student on a take-home test or homework when not specifically permitted to do so by the instructor, or by looking at your notes or other written work during an examination when not specifically permitted to do so.

Tendering of Information

Students may not give or sell their work to another person who plans to submit it as his or her own work. This includes giving their work to another student to be copied, giving someone answers to exam questions during the exam, taking an exam and discussing its contents with students who will be taking the same exam, or giving or selling a term paper to another student.

Misrepresentation

Students misrepresent their work by handing in the work of someone else. The following are examples: purchasing a paper from a term paper service; reproducing another person's paper (even with modifications) and submitting it as their own; having another student do their computer program or having someone else take their exam. Bribery: Offering money or any item or service to a faculty member or any other person to gain academic advantage for yourself or another is dishonest.

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University Policies

Accommodations

Iowa State University complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact your instructor to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with your instructor, you will need to obtain a SAAR form with recommendations for accommodations from the Student Accessibility Services located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email accessibility@iastate.edu. Retroactive requests for accommodations will not be honored.

Religious Accommodation

If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Dead Week

This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook.

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email studentassistance@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Accessibility Statement

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Free Speech

Iowa State University supports and upholds the First Amendment protection of freedom of speech and the principle of academic freedom in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Canvas for Students at ISU

Getting Started

1. Be sure to have an ISU NetID. If you do not, please visit Passwords and Accounts (<https://www.it.iastate.edu/services/accounts>)
2. Login to [Canvas](#) with your ISU NetID and password and look for your course for this semester.

Canvas Help

General help with Canvas can be found under the Help link in the global navigation menu on the left side of your Canvas page. You will find:

- [Canvas Live Chat – 24*7 live chat with Canvas specialists](#)
- [Canvas Guides-a repository of how-tos](#)
- [Ask the Canvas Community-Online support forum for canvas users. Log in using ISU credentials.](#)

- ISU Canvas Support Line: Call 515 294 4000, press 2 and then press 1. [Hours of operation](#).
- Go to [Lynda.com](#) and log in with your ISU credentials. Search for the desired tutorial.

Basic Troubleshooting (if Canvas is not working)

- Username/Password not working?
 - The login information (username and password) for Canvas is the same as for your ISU email account.
 - For help with Username and Password, please visit [University Accounts](#) or contact Solution Center at 515-294-4000 or solution@iastate.edu.
- If you get an error message, check for Browser and Java Issues on your computer.
- If you are unable to access course content or activities (e.g., Tests, Discussions, Assignments, etc.), contact your instructor.
- Check general [Technology Support for Students](#)