Fall Semester 2021

CDS 290 – Game and Sports Analytics

Department of Computational and Data Sciences

College of Science

Department of Computational and Data Sciences

Thinking Computationally

- *Systematic development and application of computational techniques for modeling and simulation of scientific and social phenomena or social processes.*
- *Systematic development and application of techniques for mining, managing, and analyzing large sets of data.*

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Interested in Sports? Interested in Sports Analytics?

Who is the greatest Greatest of All Time (GOAT)? Which sport do they come from?

- Did performance enhancing drugs help Barry Bonds? Roger Clemens?
- Has Patrick Mahomes II outperformed, Tom Brady? Peyton Manning? Johnny Unitas? Who is Johnny Unitas, anyway?
- Are the Ethiopians faster marathon runners than the Kenyans?
- Is there such a thing as a clutch performer? In the regular season? In the playoffs?
- What is the relationship between player salaries and winning championships?

How can we use data and analytics to answer these questions? Where can we get the data to perform these analyses? Learn how to answer these and many other sports questions in CDS 290.

Enroll in CDS 290 Fall 2021

Timing is everything, especially when it comes to going to college. GMU academic calendars let you know crucial deadlines for registration, last days to add classes, last days to drop classes, midterm and exam schedules, and most important, when you get time off.

Check out all the important dates for planning your semester. Find your priority registration date, payment due dates, last day to add or drop classes, see when you need to start studying for exams or find out when a semester break starts — the Office of the Registrar has all the information you need to start your year out on the right foot.

There are no prerequisites for CDS 290

If you know something about statistics and/or Excel, that is great but not necessary. We will teach you what you need to know to analyze sports performances.

Your Professor, Ralph Romanelli, PhD

Adjunct Professor of Computational and Data Sciences at George Mason University and Northern Virginia Community College and Faculty Advisor to the Sports Analytics Club Program. Teaching Computers for Scientists, Game and Sports Analytics, Java, Abstract Data Structures, Statistics and Quantitative Reasoning.

GMU Faculty Advisor to the Sports Analytics Club Program (SACP) advising 22 clubs nationwide. Faculty Advisor for the Quince Orchard High School (QOHS) Sports Analytics Club. Projects include statistical performance evaluation for the QOHS basketball team and advocacy for Jamal Murray's selection to the NBA All-Star game of 2020.

Previously, more than 38 years of experience providing Information Technology products and services to commercial and government organizations, both nationally and internationally including as a deployed Program Manager in Baghdad, Iraq. A leader of capture and proposal efforts and Program Manager on billion-dollar opportunities.

Careers in Sports Analytics

Based on recent job postings on ZipRecruiter, the Sports Analytics job market in both Fairfax, VA and the surrounding area is very active. People working within the Sports Analytics category in your area are making on average $95,580 per year, or $2,470 (3%) more than the national average annual salary of $93,110. Virginia ranks number 4 out of 50 states nationwide for Sports Analytics job salaries.

https://www.ziprecruiter.com/Salaries/Sports-Analytics-Salary#:~:text=Based%20on%20recent%20job%20postings,average%20annual%20salary%20of%20%2493%2C110.

Those who have an interest in sports and possess an analytical mindset have the unique ability to turn both of these passions into an exciting and rewarding career. Just like the practice that goes into becoming a professional athlete, aspiring sports data analysts should practice and develop their skills in order to be successful in this role.
https://www.northeastern.edu/graduate/blog/sports-analytics-career/

GOLDMAN SACHS: There's a fortune to be made analyzing sports stats

https://www.businessinsider.com/goldman-sachs-sports-economy-analytics-statistics-2017-7

At the core of the story is what makes anything sports-related intriguing to so many people: an undying competitive spirit that has franchises — even full leagues — chasing any possible advantage. And in this case, that edge comes from statistically analyzing mountains of athlete data.

> *There's a fortune to be made crunching stats in a post-Moneyball world, and the potential for profit extends far beyond baseball, into everything from soccer to basketball.*
> Joe Ciolli

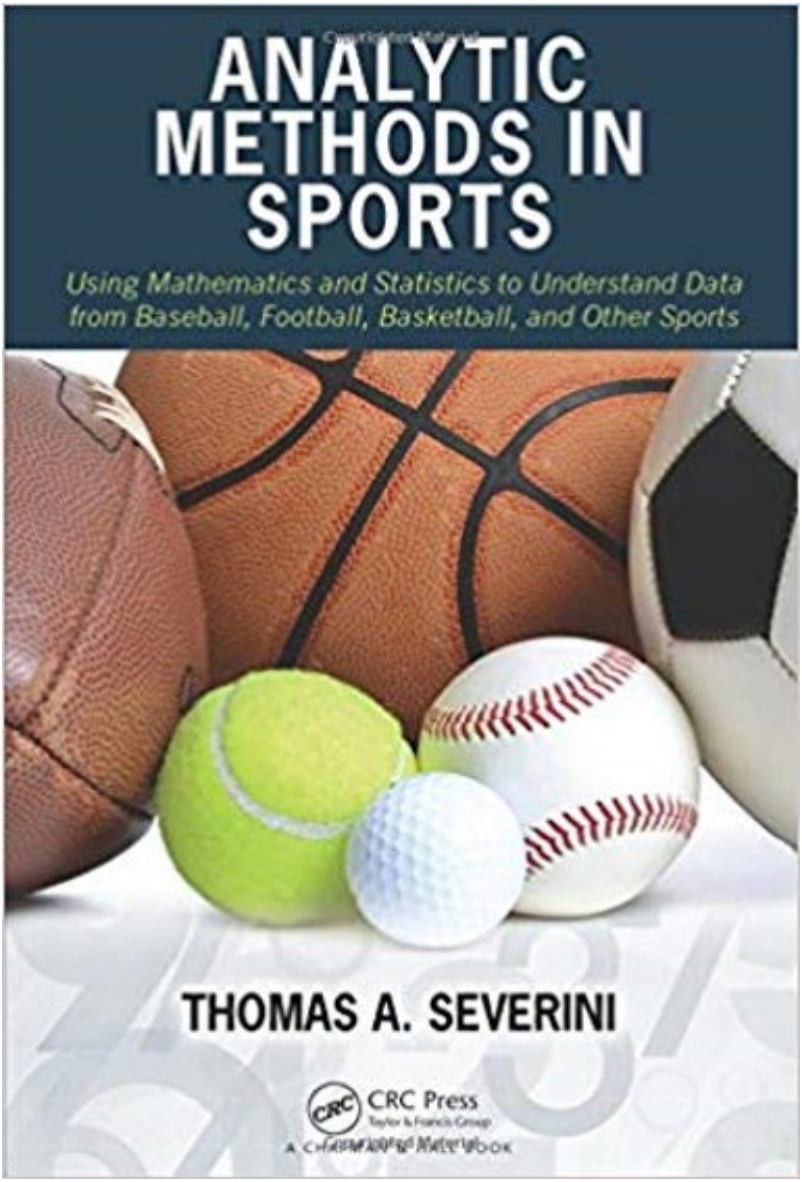
Textbook

Analytic Methods in Sports, by Thomas A. Severini, PhD.

The Most Useful Techniques for Analyzing Sports Data

One of the greatest changes in the sports world in the past 20 years has been the use of mathematical methods to analyze performances, recognize trends and patterns, and predict results. Analytic Methods in Sports: Using Mathematics and Statistics to Understand Data from Baseball, Football, Basketball, and Other Sports provides a concise yet thorough introduction to the analytic and statistical methods that are useful in studying sports.

The book gives you all the tools necessary to answer key questions in sports analysis. It explains how to apply the methods to sports data and interpret the results, demonstrating that the analysis of sports data is often different from standard statistical analysis. Requiring familiarity with mathematics but no previous background in statistics, the book integrates a large number of motivating sports examples throughout and offers guidance on computation and suggestions for further reading in each chapter.


ANALYTIC METHODS IN SPORTS
Using Mathematics and Statistics to Understand Data from Baseball, Football, Basketball, and Other Sports
THOMAS A. SEVERINI
CRC Press