

# Syllabus for STOR 538-001

## Sports Analytics

### Spring 2021

**Head Coach:** Dr. Mario Giacomazzo      **Press Conference:** Every Tuesday  
E-mail: [mgiacoma@email.unc.edu](mailto:mgiacoma@email.unc.edu)      9AM to 1PM  
Phone: 480-489-1398  
Office: Anywhere I Am

**Personal Trainer:** Andy Ackerman  
Email: [atacker@email.unc.edu](mailto:atacker@email.unc.edu)  
Office Hours: Wednesday, 9AM to 10AM  
Friday, 12PM to 1PM

**Game Days:** MWF from 10:10AM to 11:00AM on Zoom

**Zoom Links:** [Game Days](#) (PW: supermario)  
[Press Conference](#)  
[Andy's Training Days](#) (PW: goheels)

**Course URL:** Website: [https://supermariogiacomazzo.github.io/STOR538\\_WEBSITE/](https://supermariogiacomazzo.github.io/STOR538_WEBSITE/)  
Assignment Submission: <https://sakai.unc.edu/> and login with your Onyen

**Description:** Survey the application of statistics and mathematics to the sports industry exploring the history of analytics across various sports, understanding the advantages of sports analytics for both on-field performance and off-field business decisions, and examining current research to encourage creative thought of future development.

The course will be organized by sport to ensure a comprehensive exploration of sports analytics. We will start with in-depth studies in Baseball, Basketball, American Football, Hockey, and Soccer. Later in the course, we will branch out according to the diverse interests of the class.

The statistical programming language R will be used to generate visualizations and perform basic modeling.

**Prerequisites:** UNC STOR Master's Student / STOR 320 / STOR 455

#### Required

**Textbooks:** *Mathletics*, Winston, 2012 ([ISBN: 9780691154589](#))  
*Handbook of Statistical Methods and Analyses in Sports*, Albert, Glickman, Et al., 2017 ([ISBN: 9781498737364](#))

#### Optional

**Textbooks:** *Analytic Methods in Sports*, Severini, 2015 ([ISBN: 9781482237016](#))

*Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers*, Alamar, 2013 ([ISBN: 9780231162920](https://www.amazon.com/dp/9780231162920))

**Software:** A personal laptop with a working copy of **R** and **R Studio** will be useful. Directions for free downloads of these materials will be provided.

**Final Grade:** Practice (10%)  
Gameday Speeches (20%)  
Regular Season (20%)  
Playoffs (30%)  
Championship (20%)

**Practice:** Attendance is **mandatory**. Once per week at random, I will take attendance using a Google Form worth 5 points. You will need to be in class to get the information for attendance. If a guest speaker is scheduled, attendance will be taken and worth 5 points even if attendance has already been taken for that week. Only students in class will be eligible for the points. Any students who are absent will be penalized by receiving 0 points. At the end of the semester, the attendance grade will be curved so students who had perfect attendance get 100% on their attendance grade.

The only way to be excused from the point penalty for absence is by acquiring a university approved absence (<https://catalog.unc.edu/policies-procedures/attendance-grading-examination/>).

**Gameday  
Speeches:**

**Gameday speeches** are to be done in teams. **Biweekly**, I will give you a journal article(s) from a refereed journal to read and summarize in a **6 slide** gameday speech using summarized bullet points. First slide should contain the title of the article, the names of the author(s), and the name(s) of the presenters. Second and third slide should summarize the overarching theme of the article(s). Fourth and fifth slide should summarize the methodology used. The sixth slide should conclude with points in the article you found interesting, confusing, and/or problematic. The presentation should be submitted on Sakai before class starts on the due date. On gameday, I will use a random number generator to pick **2 groups** to present. All groups will be graded based on the criteria, but only 2 groups will present. This will be followed by an in-class discussion.

**Regular  
Season:**

The **regular season** consists of **biweekly** quizzes on the material presented in class over the previous two weeks. This includes what was taught in lecture and what was presented during gameday speeches. The quizzes will be multiple choice, and you will be given approximately 20 minutes to complete in class.

**Playoffs:** There will be two rounds of playoffs during the semester both of which can be considered as miniature team projects. Both projects will have detailed rubrics.

*Round 1:* The **first round** will be a data gathering and summary report. Imagine you are an analyst working for the coach or athlete and want to discover insights that would bring a competitive edge. You will have to establish a research goal, watch or play an event/game, gather the data, and summarize your results using statistics and visualization. All of your findings will be submitted in a **paper of 3 to 5 pages**.

*Round 2:* The **second round** will be a sports betting project in which you will gamble \$0. I will supply you with data, and then you will be required to analyze data for the purpose of making bets against point spreads. You are required to use form of statistical modeling or machine learning. In a **paper of 3 to 5 pages**, you will summarize the data you used, the methodology employed, and your final picks based off prediction.

**Championship:** The **Championship** will consist of a **4 to 7 paged research paper** with a minimum of **10 citations** studying a sport of interest that is not of focus in the course. Like the playoffs, this final assignment will be done in a team. Sometime during the scheduled final exam time, **May 7 between 8:00AM and 11:00AM**, your team will meet with me to turn in your paper and discuss what you learned. The paper will be organized in the following subsections:

*Introduction:* Describe the sport selected by writing about how it is played, when is it played, where is it most popular, how much capital is invested, and why you chose it.

*Literature Review:* Discuss how analytics have been used historically in the sport, what types of metrics are used to evaluate performance on the field and/or off the field, who are the best athletes/teams/organizations based off those metrics. Many obscure sports do not have an extensive history of complex analytics, but all sports track information in order to evaluate performance. Talk about any implementation of gambling and what types of bets exist.

*Future Work:* Critically think about where you see ways in which analytics can be used to improve the sport. Think about ways in which analytics from other more popular sports could be applicable in the sport you selected. Try to creatively design metrics that could be of use to evaluate performance. This section is the most important and should test your ability to innovate in areas primarily ignored that require innovation for growth. What information does the sport have or not have that could help the organizations, managers, or athletes that are financially invested in the sport you selected.

*Conclusion:* Summarize your paper and discuss what appreciation you gained for this sport after your in-depth analysis.

**Team Projects:** Many of the assessments in this course will be done in a team of **4 or 5 students** randomly chosen. For each team-based assignment, you will be given a different team. This will force you to interact with the majority of the class throughout the semester. After each team-based assignment, you will grade the contribution of your teammates on a scale from **0 to 3** and this will contribute to your overall grade for the given assignment. A decent portion of your final grade will be influenced by this.

**Grade Scale:** The below grading scale is guaranteed.

A	94 to 100	B	83 to 86.99	C	73 to 76.99	D	60 to 66.99
A-	90 to 93.99	B-	80 to 82.99	C-	70 to 72.99	F	0 to 59.99
B+	87 to 89.99	C+	77 to 79.99	D+	67 to 69.99		

**COVID-19:** Each of us has a responsibility to know and act on these standards and policies in a way that maximizes a safe and healthy environment for us to teach, work, learn and live. To this end, we are developing a set of community standards and policies for our students, faculty, staff and visitors. We are all in this together, and we believe that together, we can face the challenges presented by COVID-19 with resilience, determination and great support for our community.

See <https://carolinatogether.unc.edu/community-standards-3-2/> for a list of guidelines that we all need to follow to reduce the spread of COVID-19.

- Understand How COVID-19 Spreads
- Wash Your Hands Often
- Practice Physical Distancing
- Wear a Face Mask
- Maintain Clean, Safe Spaces
- Engage in Smaller Group and Virtual Settings
- Follow Immunization Recommendations
- Protect the community
- Provide Medical Return Clearance

**Delivery  
Method:**

This course is classified as a remote course. More detail of this delivery method is found at <https://carolinatogether.unc.edu/> and provided below:

- Students participate remotely for the entire semester and do not attend any in-person sessions in the classroom.
- Remote classes will have a scheduled class time but no physical location. Students can participate from a residence hall, campus study space, off-campus residence, or from far away from campus.
- The instructor will determine whether the class will be taught synchronously, asynchronously, or a combination of the two.
- Types of courses that may be taught with this mode include large classes where physical distancing could not occur.

## **Zoom**

**Etiquette:** These are my five expectations of you regarding Zoom.

- Have your camera turned on.
- Mute your microphone unless answering or asking a question.
- Communicate by unmuting yourself or using the chat feature.
- Be mindful of background noise when not muted.

Limit your distractions and avoid multi-tasking.

**Attendance:** No right or privilege exists that permits a student to be absent from any class meetings, even online classes, except for these University Approved Absences: Authorized University activities, and disability/religious observance/pregnancy, as required by law and approved by [Accessibility Resources and Service](#) and/or the [Equal Opportunity and Compliance Office](#) (EOC)

Significant health condition and/or personal/family emergency as approved by the [Office of the Dean of Students](#), [Gender Violence Service Coordinators](#), and/or the [Equal Opportunity and Compliance Office](#) (EOC).

**Accessibility:** The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in difficulties with accessing learning opportunities.

All accommodations are coordinated through the Accessibility Resources and Service Office. See the ARS Website for contact information: <https://ars.unc.edu> or email [ars@unc.edu](mailto:ars@unc.edu).

**Honor Code:** All students are expected to follow the guidelines of the UNC honor code. In particular, students are expected to refrain from “lying, cheating, or stealing” in the academic context. If you are unsure about which actions violate that honor code, please see me or consult [honor.unc.edu](https://honor.unc.edu).

Students are bound by the Honor Code in taking exams and in written work. The Honor Code of the University is in effect at all times, and the submission of work signifies understanding and acceptance of those requirements. Plagiarism will not be tolerated. Please consult with me if you have any questions about the Honor Code.

The University of North Carolina at Chapel Hill has had a student-administered honor system and judicial system for over 100 years. The system is the responsibility of students and is regulated and governed by them, but faculty share the responsibility. If you have questions about your responsibility under the honor code, please bring them to your instructor or consult with the office of the Dean of Students or the Instrument

of Student Judicial Governance. This document, adopted by the Chancellor, the Faculty Council, and the Student Congress, contains all policies and procedures pertaining to the student honor system. Your full participation and observance of the honor code is expected ([honor.unc.edu](http://honor.unc.edu)).

**Counseling  
Services:**

CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

**Title IX:**

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community.

Please contact the Director of Title IX Compliance (Adrienne Allison – [Adrienne.allison@unc.edu](mailto:Adrienne.allison@unc.edu)), Report and Response Coordinators in the Equal Opportunity and Compliance Office ([reportandresponse@unc.edu](mailto:reportandresponse@unc.edu)), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators ([gvsc@unc.edu](mailto:gvsc@unc.edu); confidential) to discuss your specific needs.

Additional resources are available at [safe.unc.edu](http://safe.unc.edu).

**Legal:**

Dr. Mario reserves the right to make changes to the syllabus, including all due dates. These changes will be announced as early as possible so that students can adjust their schedules.