Syllabus for STOR 538-001
Sports Analytics
Spring 2026

Head Coach: Dr. Mario Giacomazzo   **Press Conference**: M, 3PM – 4PM
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Personal   Lily Feingold   **Training Day:** TBD
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Game Days: MWF from 11:15AM to 12:05PM in Gardner 105

Course URL: Website: https://supermariogiacomazzo.github.io/STOR538_WEBSITE/

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.

Objectives: Students will learn about the history of the sports analytics industry with primary focus on baseball, basketball, football, and hockey.

Students will read and present modern peer-reviewed research in sports analytics.

Students will understand how core topics from mathematics, probability, statistics, economics, etc. are pervasive in the field of sports analytics.

Students will strengthen data science skills by predictive modeling using past game-level data to predict future game outcomes like point spreads and point totals.

Students will practice the full process of data science on any sport of their choice. Starting with innovative research questions, students will need to gather their own data and then present findings on their data producing a capstone project that is a unique piece of research in the sports analytics field.

Prerequisites: UNC STOR Master's Student / STOR 320 / STOR 455 (Required)

Proficient at Statistical Programming in R, Python, etc. (Recommended)

Proficient at Data Cleaning, Data Visualization, Data Modeling (Recommended)

Familiar with Linear Regression Models, Model Selection Methods, Cross-Validation, Probability (Recommended)

Software: A personal laptop with **R** or **Python** would be useful.

Required Textbooks: *Mathletics Second Edition,* Winston Et al., 2022 (ISBN: 9780691177625)

Final Grade: Attendance (5%)
Practice (5%)
Gameday Speeches (10%)
Regular Season (20%)
Playoff (25%)
Championship (25%)

Attendance: Attendance will be taken every class using the UNC Check-in App. You will need to install the UNC Check-in app to your mobile device and bring it to every class. Starting at the beginning of class, you will have 15 minutes to check-in using the mobile app. Instructions for installing and using the UNC Check-in App are available at https://unccheckin.unc.edu/. Go to this website to learn more. You need to attend at **least 70%** of the lectures to get credit for attendance, otherwise you will receive a 0 for your attendance grade. If you need to miss class for a reason permitted by the university and you don't want to be penalized, you will need to get a university approved absence at https://uaao.unc.edu/submit-a-request/ . If you cannot get a university approved absence and don't want to be penalized, you must notify your instructor of the reason and provide documentation of the reason in email. The reason should line up with UNC'S definition of a university approved absence. For example, a job interview would not be approved by the university or me.

Practice: There will be **at least 2 assignments** designed to test proficiency in data science. This class involves group projects that require strong data science skills. These assignments will require you to perform data science tasks with data and must be done **individually** without the help of any other students in the course. The work required for these assignments will **not** be taught in the course but will come from material and topics taught in STOR 320 and/or STOR 455 and/or other provided material. These assignments will be submitted to either Canvas or Gradescope by the due date. You will receive a 25% penalty for less than one day late, 50% penalty for less than two

days late, and 75% penalty for less than three days late. After three days, practice assignments will not be accepted. Expect these assignments **early** in the semester.

Gameday Speeches: **Gameday speeches** are to be done in teams. **Biweekly**, you will find a sports analytics article from a refereed journal to read and summarize in an slide show presentation using summarized bullet points. During class on the due date, **3 or 4 groups** will be randomly selected to present their slides to the class. If you are in a group randomly selected, you can gain bonus points based on the quality of the presentation. If you are in a group randomly selected, you will **not gain bonus points** and **lose points** for missing your group's presentation. Exceptions will be made for approved absences and in these cases, students should respectfully notify their group in advance.

These will be done in teams and you will be assessed by your peers based on your contribution. **See course website for more detailed information.**

Regular Season: The **regular season** consists of **biweekly** quizzes on the material presented in class over the previous weeks This includes what was taught in lecture, what was in the reading, and what was presented during gameday speeches. You will be given at least 15 minutes to complete in class. These quizzes will be taken on **Canvas** so a computer will be required on these days. **Let me know if you need ARS accommodations.**

Playoff: The **playoff** will be a sports betting project in which you will gamble **$0**. I will supply you with some basic data. You are required to build a dataset and use some form of statistical modeling or machine learning to generate predictions on real NBA basketball games that haven't occurred yet. In a **paper of 5 to 12 pages**, you will summarize the data you used and summarize your methodology for generating your predictions. You will not only be assessed on your paper but also on the **accuracy** of your predictions. Therefore, failure to submit your predictions by the **strict deadline** prior to the first game will result in a **significant loss** of points.

This project will be done in teams and you will be assessed by your peers based on your contribution. **See course website for more detailed information.**

Championship: The **championship** 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. There will be three important steps in this project where you will be assessed. You will be required to submit your data by a certain date in the second half of the semester. Then, you will submit your analysis of that data in a **5 to 12 page paper** by **11:59PM** on **Monday, April 27**. Finally, you will be required to present your findings to the rest of the class during our university scheduled final exam period

on **Monday, April 29** between **4PM** and **7PM.** Failure to attend the final presentations without a university approved reason will result in a penalty.

This project will be done in teams and you will be assessed by your peers based on your contribution. **See course website for more detailed information.**

Team Projects: Many of the assessments in this course will be done in teams of **3 to 6 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 5** 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: Grades will be curved at the end of the semester based off the highest grades in the course. Then, after that, your letter grades will be assigned according to this table. There will be no extra credit, no rounding up, etc. for any student.

A	93 to 100	B	83 to 86.99	C	73 to 76.99	D	60 to 66.99
A-	90 to 92.99	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		

UNC Attendance Policy: As stated in the University's Class Attendance Policy, no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities: University Approved Absence Office (UAAO) website provides information and FAQs for students and FAQs for faculty related to University Approved Absences

2. Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)

3. 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).

Instructors may work with students to meet attendance needs that do not fall within University approved absences. For situations when an absence is not University approved (e.g., a job interview, illness/ flu or club activity), instructors are encouraged to work directly with students to determine the best approach to missed classes and make-up assessment and assignments.

Dr. Mario will require digital documentation in situations that are not University approved, but instructor approved. Without emailed documentation, approval to miss

class will definitely not be given, and Dr. Mario has the right to inspect the validity of the documentation. Dishonest documentation is a violation of UNC's honor code.

Technology Use: Students are required to bring their cell phone to every class. Students will also need to have a working laptop on days where we have a regular season quiz since these quizzes will be done in Canvas.

Time Limit for Grade Disputes: You only have 1 week after the grading of an assessment is complete to dispute your grade and possibly receive points back for that assessment. The only grade that should be disputed and modified after the last day of class is the final exam. Dr. Mario makes mistakes and desires that all students receive a fair grade that is correct. However, it is the student's responsibility to review their grades on assignments in a timely manner so that Dr. Mario can make fair decisions and modify grades quickly.

Artificial Intelligence Use: In this course you can use generative AI tools to help you with writing code for your analyses.

Generative AI is prohibited on all quizzes and should never be used to create your slides or write your papers. If you use generative AI in any way to answer questions on your quizzes, summarize articles in your game day speeches or write portions of your playoff and championship papers, you will be reported for academic dishonesty to Student Conduct.

Late Submissions: Late submissions of game day speeches will result in a small loss of points. Late submissions of papers will come with a penalty based off Dr. Mario's discretion and the extent to which it was late. Late submissions of predictions for the playoff project will not be considered at all and this will lead to a significant loss of points. All team-based assignments will need to be submitted by every member of the team. Whoever doesn't submit on time will lose points.

Accessibility Resources: [Accessibility Resources and Service](#) (ARS – [ars@unc.edu](#)) receives requests for accommodations, and through the Student and Applicant Accommodations Policy determines eligibility and identifies reasonable accommodations for students with disabilities and/or chronic medical conditions to mitigate or remove the barriers experienced in accessing University courses, programs and activities.

ARS also offers its Testing Center resources to students and instructors to facilitate the implementation of testing accommodations.

Faculty and instructors with any concerns or questions about accommodations and/or their implementation, are invited to [reach out to ARS](#) to discuss.

Undergraduate Testing Center: The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and

who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit http://testingcenter.web.unc.edu/.

Honor Code: I expect all students to follow the guidelines of the UNC Code of Conduct. In particular, students are expected to be aware of policies related to academic integrity. You can read more about the Code of Conduct at studentconduct.unc.edu. In any course, including mine, what constitutes cheating can change from one activity to another. For example, collaboration may be encouraged for an assignment but qualify as cheating during an exam. Please see my guidelines for each activity, and if you are unsure, please ask me to clarify. In remote classes, there may be many temptations for using online exchange sites, such as Chegg. Note that these sites provide names of students who have used their materials, and they routinely cooperate with institutions around academic integrity issues. Please don't get caught up with Code of Conduct issues just because it appears to be simple and untraceable. It is not!

You are not permitted to download or upload any content from this course to the web in any form, including but not limited to Chegg, Course Hero, Coursera, Google Drive, etc. If you post my course content, you may be violating my intellectual property rights. If you post your own work from this course, you are allowing sites to profit from your intellectual property. In utilizing web sources to upload or download course content, you risk violating the University's Honor Code.

IT Acceptable Use Policy: By attending the University of North Carolina at Chapel Hill, you agree to abide by the University of North Carolina at Chapel Hill policies related to the acceptable use of IT systems and services. The Acceptable Use Policy (AUP) sets the expectation that you will use the University's technology resources responsibly, consistent with the University's mission. In the context of a class, it's quite likely you will participate in online activities that could include personal information about you or your peers, and the AUP addresses your obligations to protect the privacy of class participants. In addition, the AUP addresses matters of others' intellectual property, including copyright. These are only a couple of typical examples, so you should consult the full Information Technology Acceptable Use Policy, which covers topics related to using digital resources, such as privacy, confidentiality, and intellectual property.

Additionally, consult the Safe Computing at UNC website for information about data security policies, updates, and tips on keeping your identity, information, and devices safe.

Data Security and Privacy: UNC-Chapel Hill is committed to fulfilling its responsibilities of transparency as a state-sponsored institution of higher learning, protecting certain

types of information, and using information Carolina collects only for appropriate purposes. Consult the UNC-Chapel Hill Privacy Statement for additional information.

Counseling and Psychological Services: UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The Heels Care Network website is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to the CAPS website or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX and Related Resources: 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. Reports can be made online to the EOC or by contacting the University's Title IX Coordinator, Elizabeth Hall, or the Report and Response Managers in the Equal Opportunity and Compliance Office. Please note that I am designated as a Responsible Employee, which means I must report to the EOC any information I receive about the forms of misconduct listed in this paragraph. If you'd like to speak with a confidential resource, those include Counseling and Psychological Services, the University's Ombuds Office, and the Gender Violence Services Coordinators. Additional resources are available at safe.unc.edu.

Policy on Non-Discrimination: The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, the University's Policy Statement on Non-Discrimination offers access to its educational programs and activities as well as employment terms and conditions without respect to race, color, gender, national origin, age, religion, sex, genetic information, disability, veteran's status, sexual orientation, gender identity or gender expression. Such a policy ensures that only relevant factors are considered, and that equitable and consistent standards of conduct and performance are applied.

If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (email reportandresponse@unc.edu or see additional contact info at safe.unc.edu) or the Equal Opportunity and Compliance Office at https://eoc.unc.edu/report-an-incident/.

Learning Center: Want to get the most out of this course or others this semester? Visit UNC's Learning Center to make an appointment or register for an event. Their free, popular programs will help you optimize your academic performance. Try academic coaching,

peer tutoring, STEM support, ADHD/LD services, workshops and study camps, or review tips and tools available on the website.

Writing Center: For free feedback on any course writing projects, check out UNC's Writing Center. Writing Center coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review quick tips, or request written feedback online, visit [UNC's Writing Center online](#).

Equal Opportunity and Compliance: Equal Opportunity and Compliance Accommodations Team ([Accommodations - UNC Equal Opportunity and Compliance)](#) receives requests for accommodations for disability, pregnancy and related conditions, and sincerely held religious beliefs and practices through the University's Policy on Accommodations. EOC Accommodations team determines eligibility and reasonable accommodations consistent with state and federal laws.

Diversity Statement: I value the perspectives of individuals from all backgrounds reflecting the diversity of our students. I broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, physical and learning ability and any other way in which individuals differ from one another. I strive to make this classroom an inclusive space for all students. Please let me know if there is anything I can do to improve. I appreciate any suggestions.

Undergraduate Testing Center: The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The Center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit the [testing center website](#).

Cheating Bonus: If you get caught cheating and I am successful at prosecuting your cheating violation with the university, you will not get access to any bonus curving. This includes the curving awarded in the homework policy and any extra curving at the end of the semester.

Also, for every student that gets caught and convicted for cheating, every student who does not cheat will receive a 1% curve to their final grade beyond whatever generous curve I give at the end of the semester.

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.