Sport Performance Analytics

SPM 3703 | 3 credits | Spring 2026

Course Info

INSTRUCTOR

Scott T. Nestler, PhD, CAP, PStat
Office: Florida Gymnasium (FLG) 308
Office Phone: 352-273-0669
Email: nestler.scott@ufl.edu (preferred)

OFFICE HOURS

FLG 308 WEDNESDAY, 9:00-10:00AM;
WEDNESDAY, 3:00-4:00PM;
OR BY APPOINTMENT

MEETING TIME/LOCATION

FLG 245 TUESDAY periods 5-6 (11:45AM – 1:40PM)
FLG 245 THURSDAY period 6 (12:50PM – 1:40PM)

COURSE DESCRIPTION

The techniques and tools of data analytics are transforming many industries, to include sports. This vertical has the advantage of being widely and closely followed, with large amounts of easily accessible real-world data. Topics for study in this course include how to evaluate players, create good teams, and enhance coaching strategies. Assignments involve the hands-on use of a variety of techniques and tools, including data collection and manipulation, probability, statistics, optimization, simulation, game theory. A basic knowledge of Excel, statistics, and sports (in particular, baseball, basketball, and football) is assumed. But you do not have to be a sports fanatic.

PREREQUISITE KNOWLEDGE AND SKILLS

A basic knowledge of Excel, statistics, and sports (in particular, baseball, basketball, and football) is assumed. But you do not have to be a sports fanatic. You will be exposed to some coding languages, primarily R but also maybe Python and SQL, during the course.

REQUIRED MATERIALS

- Elmore, R., & Urbaczewski, A. (2025). *Introduction to Sports Analytics Using R*. Prospect Press. ISBN 978-1-958303-07-8.

RECOMMENDED MATERIALS

- Winston, W. L., Nestler, S., & Pelechrinis, K. (2022). *Mathletics: How gamblers, managers, and fans use mathematics in sports* (2nd ed.). Princeton University Press. ISBN 978-0-6911-7762-5.
- Alamar, B. C. (2024). *Sports analytics: A guide for coaches, managers, and other decision makers* (2nd ed.). Columbia University Press. ISBN 978-0-231-20520-7.

Instructional materials for this course consist of only those materials specifically reviewed, selected, and assigned by the instructor(s). The instructor(s) is only responsible for these instructional materials.

COURSE FORMAT

We will meet twice per week for a total 3 hours, consisting of a 2-hour lecture & discussion session on Tuesday and a 1-hour hands-on coding session on Thursday. (Bring your laptop!) There will be weekly reading assignments; it is expected that you complete these before coming to class, as there will be a short quiz on the reading. There will be a homework assignment roughly every 2 weeks, with course project requirements interspersed in between.

STUDENT LEARNING OBJECTIVES

Upon successful completion of this course, you will be able to:

- Analyze decision-making opportunities in sports using quantitative criteria.
- Locate and acquire relevant sports performance datasets from public and proprietary sources.
- Clean, transform, and visualize sports datasets to prepare them for analysis.
- Select and apply appropriate quantitative techniques (e.g., regression, simulation, optimization) to address sports performance questions.
- Design and implement a sports analytics project that answers a performance-related question.
- Interpret, visualize, and communicate project findings to technical and non-technical audiences.

Course & University Policies

UF POLICIES AND RESOURCES

UF policies and resources can be found at: https://go.ufl.edu/syllabuspolicies.

Grading

The following table shows the percent of the course grade allocated to each graded component.

Evaluation Component	Percent of Course Grade
Quizzes (10 @ 2% ea)	20%
Homework (5 @ 5% ea)	30%
Project Abstract / Proposal	5%
Draft Project Report	10%
Project Presentation	15%
Final Project Report	15%
Project Peer Evaluation	5%

Quizzes & Exams – There will be a short (~5 minute) reading quiz for each required reading assignment. There will be no exams in this course. The project will substitute for a final exam.

Attendance & Participation – Regular class attendance is absolutely expected and will not only facilitate your understanding of the material presented in the texts but also will better prepare you for the homework assignments and course project. Attendance is necessary for participation, but it is not sufficient for active participation.

Homework – There will be six (6) homework assignments, usually due by the start of class on Tuesdays, as indicated on the schedule. The first of these is an individual assignment; the other five (5) will be done with your project partners, once they have been identified. Please ensure all partners' names are on the (one) submission and document any assistance that you received outside of your project teams. Late submissions will not be allowed unless prior arrangements have been made with the instructor.

Course Project – The course project will be an in-depth investigation of a sports analytics topic. The focus can be on the use of analytics in a particular sport (e.g. baseball, football, basketball, etc.) or on a particular technology or decision opportunity. Project groups (of size 3) will be selected early in the course. A short (1-page) abstract will describe the data set to be used, questions to be investigated, and general approach. The project will culminate with a short (~8-10 minute) presentation to the class and a 6-10 page (plus appendices as appropriate) written report. Due dates are included in the Weekly Course Schedule below and weights assigned to each portion of the project are in the table above.

GRADING SCALE

The following is in accordance with the University's grading policy (available at: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/).

Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A	93.00-100%	4.0
A-	90.00-92.99%	3.67
B+	87.00-89.99%	3.33
B	83.00-86.99%	3.0
B-	80.00-82.99%	2.67
C+	77.00-79.99%	2.33
C	73.00-76.99%	2.0
C-	70.00-72.99%	1.67
D+	67.00-69.99%	1.33
D	63.00-66.99%	1.0
D-	60.00-62.99%	0.67
E	0-59.99%	0

Weekly Course Schedule

CRITICAL DATES & UF OBSERVED HOLIDAYS

- January 19: Martin Luther King Day (Monday)
- March 16-20: Spring Break (Monday - Friday)
- April 23-24: UF Fall Semester Reading Days (Thursday – Friday)

WEEKLY SCHEDULE

NOTE: 'ISAR' indicates chapters to read in the 'Introduction to Sports Analytics Using R' book. All readings are to be done before the class meeting, as there will be a quiz. Any readings in the the 'M' (Mathletics) and 'SA' (Sports Analytics, by Alamar) readings are completely.

Week	Date	Day	Topic and Assignment	Reading (& Quiz)	Homework and Project Deliverables Due
1	JAN 13	Tu	Course and Syllabus Overview	1	--
1	JAN 15	Th	(Hands-On) Install and Test Software	2	--
2	JAN 20	Tu	Types of Sports Analytics Data		--
2	JAN 22	Th	(Hands-On)		Project Teams and Ideas
3	JAN 27	Tu	Getting Sports Analytics Data	3	Homework 1 (Visualization)
3	JAN 29	Th	(Hands-On)		Project Proposal
4	FEB 3	Tu	Key Performance Indicators Baseball Analytics, Part 1	4	--
4	FEB 5	Th	(Hands-On)		--
5	FEB 10	Tu	Baseball Analytics, Part 2		Homework 2 (Baseball)
5	FEB 12	Th	(Hands-On)		--
6	FEB 17	Tu	Basketball Analytics	5	--
6	FEB 19	Th	(Hands-On)		--
7	FEB 24	Tu	Football Analytics	6	Homework 3 (Basketball)
7	FEB 26	Th	(Hands-On)		--

8	MAR 3	Tu	Hockey Analytics	7	--
8	MAR 5	Th	Project Work Session		--
9	MAR 10	Tu	Soccer Analytics	8	Homework 4 (Football)
9	MAR 12	Th	(Hands-On)		--
10	MAR 17	Tu	*Spring Break – No Class*		--
10	MAR 19	Th	*Spring Break – No Class*		--
11	MAR 24	Tu	Golf Analytics	9	--
11	MAR 26	Th	(Hands-On)		Draft Project Report
12	MAR 31	Tu	Sports Wagering & Daily Fantasy	10	Homework 5 (Other Sports)
12	APR 2	Th	(Hands-On)		--
13	APR 7	Tu	Tracking & GPS Data		Homework 6 (Fantasy)
13	APR 9	Th	Presenting Sports Analytics Content		Final Project Report
14	APR 14	Tu	Project Presentations, Part 1		Project Presentation Slides
14	APR 16	Th	Project Presentations, Part 2		--
15	APR 21	Tu	Course Wrap-Up		Peer Evaluation

SUCCESS AND STUDY TIPS

Analytics is NOT a spectator sport. To be successful in this course, you will need to get your hands "dirty" in the data. Please come see me during scheduled office hours (or find another time that works with your schedule. Choose a project topic that is of interest to you – that will make it easier to spend the necessary time to be successful with the analysis and presentation of your results.