

# DATA SCIENCES AND OPERATIONS

FALL 2024

## DSO 579 — Advanced Sports

Performance Analytics

### Professor

Lorena Martin

### Email

Lmartin1@marshall.usc.edu

### When

Tue/Thu: 11:00 - 12:20 PM

### Office

BRI 400 C

Section(s) – 16301

### Units

1.5



## WHY TAKE THIS COURSE?

Want to learn how to analyze sports performance KPIs using advanced machine learning algorithms? Want to learn how to implement the algorithms using Python? This course teaches you how to evaluate the dual performance of both ML algorithms in sports contexts and the on-field performances of players. With the rise of AI dramatically transforming athletes' and teams' strategies, our course ensures you are not just a part of the change – you are leading it. Step into the future of sports analytics and give yourself a competitive edge in this booming domain!

## COURSE OBJECTIVES

- Enhance your subject matter expertise in sports performance KPIs
- Accurately assess physical and biomechanical movements for professional athletes in different sports.
- Establish validity and reliability in wearable technology implemented in professional sports through analyses.
- Meet experts working in sports analytics in the professional sports industry.

## KEY CONCEPTS

- Analyze sports performance KPIs with Python
- Apply supervised machine learning to Sports Performance KPIs
- Apply unsupervised machine learning algorithms to discover relevant KPIs
- Evaluate not only the performance of ML algorithms in Sports but also players' performance on the field
- Learn about how AI is impacting athletes' and teams' sports performance

## COURSE DESCRIPTION

This course will incorporate a hands-on wearable technology experience to gain understanding about how data is quantified and assessed by the most popular sports technology vendors in the industry. Real life scenarios and data from professional sports will be provided to prepare students entering the sports analytics industry. This course will culminate by learning how to develop interactive dashboards and presentation reports to effectively communicate with different audiences, such front office, coaches, support staff, and players.