SPORT ANALYTICS (SPTA)

SPTA 2000: Introduction to Sport Analytic
Hlth Exercise Sci Recr Mgmt
In this course, students will be given the opportunity to develop their knowledge and application of sport analytics. Additionally, students will be able to improve their data-driven decision-making skills in various sport industry fields.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 3010: Measurement & Eval in Sport
Hlth Exercise Sci Recr Mgmt
This course introduces key measurement and evaluation concepts with applied statistical methods tailored to the sport analytics context. Topics include data reliability, validity, descriptive and inferential statistics, and measurement tools across sport performance, health, and business domains. Students will gain hands-on experience using SPSS and Excel to evaluate data and interpret findings relevant to real-world sport analytics.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 3030: Big Data Analytics in Sport
Hlth Exercise Sci Recr Mgmt
In this course, students will be introduced to the fundamentals of big data analytics and its applications in sport. The course provides a hands-on introduction to practical data analytics using the R programming language. Topics include R programming basics, data wrangling, exploratory data analysis, data visualization, and machine learning. Students will gain experience applying these methods through real-world examples and practical case studies in sport.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 3050: Data Capt, Comm. & Vis in Sp
Hlth Exercise Sci Recr Mgmt
This course will provide an overview of techniques for effectively capturing, translating, and communicating data into readable graphics and telestrations for diverse audiences. Students will delve into performance and event-oriented coding, designing, programming, and testing notational analysis solutions for data collection using HUDL Sportscode. Subsequently, data communication principles and theories will be explored using visualization tools such as the Ggplot2 package in R and Tableau.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 5110: Applied Statistics
Hlth Exercise Sci Recr Mgmt
The focus of this course is to provide students with an understanding of descriptive statistics (e.g., mean, standard deviation, frequency distribution) and inferential statistics (e.g., chi square, t-tests, analysis of variance [ANOVA], correlation, regression, factorial ANOVA, repeated measures ANOVA), and how to use SPSS and to interpret and present statistical results.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 5610: Applied Statistics
Hlth Exercise Sci Recr Mgmt
The focus of this course is to provide students with an understanding of descriptive statistics (e.g., mean, standard deviation, frequency distribution) and inferential statistics (e.g., chi square, t-tests, analysis of variance [ANOVA], correlation, regression, factorial ANOVA, repeated measures ANOVA), and how to use SPSS and to interpret and present statistical results.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6010: Measr. and Evaluation in Sport
Hlth Exercise Sci Recr Mgmt
This course presents the foundations for making reliable and valid judgments about matters of scientific concern in sport areas. Basic knowledge of measurement and evaluation for designing the various test settings and conducting the evidence-based practice will be covered, and approaches will be presented that enable you to make sound decisions based on empirical data in sport.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6020: Predictive Analytics in Sport
Hlth Exercise Sci Recr Mgmt
In this course, students will be given the opportunity to advance in their profession by expanding their knowledge of statistical techniques aimed at making evidence-based decisions.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6030: Big Data Anlyt. and Data Mgmt.
Hlth Exercise Sci Recr Mgmt
This course will focus on the practical applications of analytical methods with R programming. Students will gain general knowledge of analytic techniques such as statistics, data mining, visualization of data, and basic machine learning. This course will cover the applications in those methods through practice of R.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6040: Quan and Qual Research Methods
Hlth Exercise Sci Recr Mgmt
In this course, students will be given the opportunity to develop their knowledge and application of qualitative and quantitative research design concepts to conduct original research in the field of health and sport analytics.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6050: Comm & Data Visualization in S
Hlth Exercise Sci Recr Mgmt
This course will provide an overview of techniques for effectively translating and communicating quantitative and qualitative data into readable graphics to varied audiences, including sport agencies and the public. Visualization and communication tools such as promotional materials (e.g., infographics), statistical graphs and plots, and oral presentations will be covered to give students skills in making sport data and messaging generalizable and easily understood.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6110: Sport Business
Hlth Exercise Sci Recr Mgmt
This course is designed to provide future sport business professionals with theoretical and practical knowledge in marketing principles, management, communication process, and current business issues today. Overall, this course is intended to prepare students who can assume responsible marketing positions with skills of application and demonstration for the complex nature of today's sport business marketplace.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6120: Sport Economic Analytics
Hlth Exercise Sci Recr Mgmt
This course will focus on the economics and financial theories related to the sports market and industry.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6130: Machine Learning in Sport
Hlth Exercise Sci Recr Mgmt
The elements of sport are interwoven with vast amount of data that requires advanced analytic techniques to untangle the mystery behind machinery and intelligence in the field of sport. Machine learning, a subset of artificial intelligence, refers to the algorithms that improve automatically through learned experience based on training data to predict decisions without being explicitly programmed to do so. This course will provide an overview of how machine learning can be used to improve and predict sport outcomes.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6210: Data Anlyt. in Strength & Cond
Hlth Exercise Sci Recr Mgmt
This course will focus on the practices of strength and conditioning. Students will be given the opportunity to develop their knowledge of strength and conditioning theories and practices. In addition, advanced strength and conditioning techniques and programming will be reviewed and assessed. Current strength and conditioning research will be discussed and critiqued.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6220: Phys Asp. of Sport Perform & M
Hlth Exercise Sci Recr Mgmt
In this course, students will be given the opportunity to develop their knowledge of the physiology of sport and the current data-driven monitoring systems that are being utilized.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6230: Data Based Preven & Mgmt of Sp
Hlth Exercise Sci Recr Mgmt
In this course, students will be given the opportunity to develop their knowledge of the many different methods to prevent sports injuries and monitoring that are currently recommended and practiced within the field. Increased participation in sports has led to an associated increase in injuries so the justification for more evidence-based methods to prevent sports injuries is needed.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture

SPTA 6996A: Sport Analytics Capstone
Hlth Exercise Sci Recr Mgmt
A summative class aimed at designing, developing, completing, and defending a research-based data analysis document or a literature review and a section that encompasses the student's own critical judgment about the issue in question related to sport performance or sport business. The final format and the requirements of the project are completed in direct consultation with the student's faculty adviser or a member of the teaching faculty.
3 credits
Potentially offered with the following Instruction Type(s):
Lecture