COURSE SPECIFICATION DOCUMENT

Academic School / Department: Computer Science

Programme: Computer Science

***FHEQ* Level:** 6

Course Title: Data Analytics: Industries

Course Code: DGT 6107

Total Hours: 160
Timetabled Hours: 45
Guided Learning Hours: 15
Independent Learning Hours: 100

Credits: 16 UK CATS credits
8 ECTS credits
4 US credits

Course Description:
This course is a continuation of Sports Data Analytics I and introduces students to advanced methods of data analysis situated within a wide range of sports contexts. Building on the key skill developed in the previous course, students will learn how to apply data analytics to multi-varied datasets and interpret data relevant to different sports industry settings – these include various aspects of talent identification and scouting, fan engagement, and sports marketing and management strategies. By learning advanced analysis tools and techniques of different statistical software to extract meaningful insights from sports data, students will also develop an understanding of how analytics informs data-driven decision-making processes with a variety of sports industries.

Prerequisites:
MTH 5120

Aims and Objectives:
The aim of this course is to equip students with the necessary skills and knowledge to effectively analyze multi-varied sports data across a variety of different sports industry settings.
By the end of the course, students should be able to:

- Apply advanced statistical and mathematical techniques to analyze sports data and draw meaningful conclusions.
- Interpret and communicate analytical findings to inform decision-making in sports management.

- Utilize appropriate software tools for sports data analysis.

Programme Outcomes:
BSc Computer Science: A1, A5, B2, B6, C1, C2, C4

A detailed list of the programme outcomes is found in the Programme Specification.

This is located at the archive maintained by Registry and found at:
https://www.richmond.ac.uk/programme-and-course-specifications/

Learning Outcomes:
By the end of this course, successful students should be able to:
Upon successful completion of this course, students will be able to:

Knowledge and Understanding

- Utilize statistical software tools (Excel, SPSS, R and or Python) for sports data analysis.
- Develop critical understanding of how sports data analytics informs data-driven decision-making processes.

Cognitive skills

- Apply advanced inferential statistical and mathematical techniques to analyze sports data.
- Evaluate and interpret analytical results across a variety of sports industry contexts

Practical and professional skills

- Communicate findings effectively through written reports and presentations.

Key skills

- Develop analytical skills and communicate their findings effectively to others through written reports and presentations.

Indicative Content:
- Advanced regression analysis in sports industries
- Advanced statistical methods in sports industries
- Data-Driven Decision-Making
- Natural Language Processing and Text Mining
- Predictive modelling and forecasting in sports
- Ethical considerations in sports data analysis
- Case studies and practical applications

Assessment:
This course conforms to the University Assessment Norms approved at Academic Board and located at: https://www.richmond.ac.uk/university-policies/

Teaching Methodology:

The course will be delivered through a combination of lectures, practical sessions, case studies, and group discussions. Students will have hands-on experience working with real-world sports data sets using statistical software tools. Guest lectures from industry experts and sports analysts may be arranged to provide insights into the practical applications of sports data analysis in sport industries.

Indicative Text(s):

Araújo, D., Couceiro, M., Seifert, L., Sarmento, H., Davids, K, (2021). Artificial Intelligence in Sport Performance Analysis. Taylor & Francis.
Atwater, C., Baker, R., and Kwartler, T., 2023. *Applied Sport Business Analytics.* Human Kinetics.
Butterworth, A., 2023. *Professional Practice in Sport Performance Analysis*. Routledge.
Byon, K., Yim, B., Zhang, J., 2023. Marketing Analysis in Sport Business: Global Perspectives. Routledge.
Fried, G., and Mumcu, C., 2017. *Sport Analytics.* Routledge.
Harrison, C., and Bukstein, S., 2017. *Sport Business Analytics.* CRC Press.
Kwartler, T., 2022. *Sports Analytics in Practice with R*. Wiley
McGarry, T., O'Donoghue, P., and Sampaio, J., 2013. *Routledge Handbook of Sports Performance Analysis.* Routledge.
Ratten, V., and Hayduk, T., 2017. *Statistical Modelling and Sports Business Analysis*. Routledge.
Severini, T., 2020. *Analytic Methods in Sports.* 2nd ed. CRC Press.

Journals

Journal of Quantitative Analysis in Sports
Journal of Royal Statistical Society
Journal of Sports Analytics
Journal of the American Statistical Association
Journal of Sports Economics

Web Sites

R tutorial
https://www.statmethods.net/r-tutorial/index.html
https://www.datacamp.com/courses/free-introduction-to-r

American Statistical Association
http://www.amstat.org/

Royal Statistical Society
http://www.rss.org.uk/site/cms/contentCategoryView.asp?category=90

See syllabus for complete reading list

Change Log for this CSD:

Nature of Change	Date Approved & Approval Body (School or AB)	Change Actioned by Registry Services
First edition	March 2024	
Total Hours Updated	April 2024	