COURSE SPECIFICATION DOCUMENT

Academic School / Department: Science, Innovation and Technology

Programme: School of Liberal Arts

***FHEQ* Level:** 5

Course Title: Data Analytics: Performance

Course Code: DATA 5101

Student Engagement Hours: 160 (Standard 4- credit BA Course)
Lectures: 45
Seminar/Tutorials/Lab: 15
Independent / Guided Learning: 100

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

Course Description:
This course introduces students to the principles and methods of data analysis within a variety of different sport contexts. Students will learn how to collect, analyze, and interpret data relevant to various aspects of sports, such as performance analysis and athlete evaluation. In addition, students will learn how to use statistical software (including Excel, SPSS, Python and R), effectively apply software to deploy a variety of descriptive, inferential statistical and other analytical techniques, and extract meaningful insights from sports data. These analytical tools will be used throughout the course to evaluate datasets from both individual and team performance sport settings. By learning data preparation, analysis, and visualization skills, students will also develop an understanding of how sport data analytics is applied within a variety of sports industry settings.

Prerequisites:
MATH 4101 Probability and Statistics AND 40 Credits

Aims and Objectives:
Aim: the aim of this course is to equip students with the necessary skills and knowledge to effectively analyze sports data within different sport contexts.

Objectives:

- Understand the importance of data analysis in sports settings.
- Demonstrate proficiency in collecting, cleaning, and preparing sports data for analysis.
- Apply statistical and mathematical techniques to analyze sports data and draw meaningful conclusions.
- Interpret and communicate analytical findings to inform decision-making in sports contexts.
- Utilize appropriate software tools for sports data analysis.

Programme Outcomes:
A5(I), B5(II), C5(I), D5(I)

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/

Course Learning Outcome	**Programme Outcome**
Disciplinary Knowledge and Understanding Collect, collate, and clean sports data from various sources. Utilize statistical software tools (Excel, and R) for sports data analysis.	**A5 (I)**
Disciplinary Applied Skills Apply descriptive and inferential statistical and mathematical techniques to analyse sports data. Evaluate and interpret analytical results in a variety of sports settings.	**B5 (II)**
Communication Skills Develop analytical skills and communicate their findings effectively to others through assessments.	**C5 (I)**
Transferable Skills Work individually and together as a member of a team, in group work that will require rational, and analytical approaches.	**D5 (I)**

Indicative Content:

- Introduction to sports data analysis
- Introduction to R
- Data collection and pre-processing techniques
- Exploratory data analysis and data visualization techniques in sports studies
- Statistical methods in sports studies
- Correlation and regression analysis in sports studies
- Data-Driven Decision-Making
- 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:
This course will be delivered face to face through a combination of lectures and interactive sessions. In addition to classroom activities, there are guided learning elements that are tutor led and arranged through Blackboard. These activities can be asynchronous online sessions, flipped classrooms, set readings with discussion boards or set guest lectures for example. Set activities are monitored by the instructor to ascertain student engagement. Students are encouraged to prepare for class and to play an active part, to raise questions, following-up ideas and interact with a wide range of provided material.

Indicative Text(s):
Atwater, C., Baker, R., and Kwartler, T., 2023. *Applied Sport Business Analytics.* Human Kinetics.
Fried, G., and Mumcu, C., 2017. *Sport Analytics.* Routledge.
Harrison, C., and Bukstein, S., 2017. *Sport Business Analytics.* CRC Press.
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.
Todorovich, J. R., 2024. *Sport Performance Analytic Methods.* 1st Ed. Human Kinetics.

Journals
European Journal of Sport Science (EJSS)
International Journal of Computer Science in Sport (IJCSS)
International Journal of Performance Analysis in Sport (IJPAS)
Journal of Quantitative Analysis in Sports (JQAS)
Journal of Royal Statistical Society
Journal of Sports Sciences (JSS)
Sports Medicine – Open

Websites
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	Nov 2024	