

Liverpool John Moores University

Title: Research Methods in Data Science
Status: Definitive
Code: **7020DATSCI** (125173)
Version Start Date: 01-08-2021

Owning School/Faculty: Astrophysics Research Institute
Teaching School/Faculty: Astrophysics Research Institute

Team	Leader
Iain Steele	Y
Toby Moore	
Philip James	

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 40

Total Learning Hours: 200 **Private Study:** 160

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	24
Seminar	16

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	Class Test	Paper Review	50	
Presentation	Proposal	Project Proposal - Pitch and Handout	50	

Aims

The module aims to equip students with the research skills necessary to undertake their dissertation project, including the preparation of a research proposal or business case for the activity (depending on the academic/industrial context), consideration of ethical and legal issues, literature review, selection of an

appropriate methodology and data set, oral and written presentation skills and project management.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse the legal and ethical issues surrounding prior and proposed experiments in data science.
- 2 Synthesize the results from the academic literature to evaluate outstanding research problems and effectively disseminate that information.
- 3 Propose the creation of an innovative data science experiment following the theory and principals of research design and project management.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Class Test	1	2	
Project Proposal	1	2	3

Outline Syllabus

1. *The scientific method and hypothesis testing*
2. *Data science methods and the data driven research approach*
3. *Data set and methodology selection*
4. *Legal and ethical issues in research and data science*
5. *Bias and unintended consequences in data science*
6. *Privacy and security*
7. *Project management*
8. *Version control*
9. *Teamwork and conflict resolution*
10. *Research dissemination (papers, proceedings, conferences, seminars)*
11. *Conducting a literature search*
12. *Presenting your research - oral and written communications*
13. *Developing a Research Proposal*
14. *Developing a Business Case.*
15. *Career Development*

Learning Activities

Lectures
Seminar discussions
Peer to peer presentations
Directed Reading
Literature searches
Writing Assignments

Notes

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