

Liverpool John Moores University

Title: Machine Learning and Data Mining
Status: Definitive
Code: **7021DATSCI** (125175)
Version Start Date: 01-08-2021

Owning School/Faculty: Astrophysics Research Institute
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Ivan Olier-Caparroso	Y

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 63
Total Learning Hours: 200 **Private Study:** 137

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	20
Practical	30
Seminar	10

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Report based on machine learning and data mining methods	50	
Exam	AS2	Examination	50	3

Aims

The module aims to develop skills in machine learning and data mining, using methods from computational learning theory and artificial intelligence to extract previously unknown relationships from large data sets.

Learning Outcomes

After completing the module the student should be able to:

- 1 Synthesise machine learning and data mining methods to extract previously unknown relationships in data.
- 2 Evaluate suitable machine learning and data mining methods based on the type of data and problem to be addressed.
- 3 Critically analyse the effectiveness of different machine learning and data mining methods.

Learning Outcomes of Assessments

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

Report based on data mining	1	2	3
Examination	1	2	3

Outline Syllabus

1. *Introduction*
2. *Supervised learning*
3. *Artificial neural networks*
4. *Support vector machines and kernel methods*
5. *Tree-based methods and ensemble learning*
6. *Deep learning*
7. *Unsupervised learning*
8. *Advanced topics in machine learning and data mining*

Learning Activities

Lectures
Seminar discussions
Directed Reading
Computer based exercises

Notes

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