

Liverpool John Moores University

Title: MACHINE LEARNING FOR DATA SCIENTISTS
Status: Definitive
Code: **7126COMP** (122191)
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Andrew Laws	Y

Academic Level: FHEQ7
Credit Value: 20
Total Delivered Hours: 55
Total Learning Hours: 200
Private Study: 145

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	22
Practical	33

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Predictive Modelling Task	40	
Artefacts	AS2	Ensemble Modelling Task	60	

Aims

To consolidate and extend prior learning and experience of data science by exploring predictive analytics through the application of machine learning to data sets

To build experience in the process of an analytical exercise

Learning Outcomes

After completing the module the student should be able to:

- 1 Formulate and construct an appropriate predictive analytical modelling task
- 2 Critically evaluate the outcomes of a predictive analytical modelling task
- 3 Formulate and construct an appropriate ensemble analytical modelling task
- 4 Critically evaluate the outcomes of a ensemble analytical modelling task

Learning Outcomes of Assessments

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

Predictive Modelling Task	1	2
Ensemble Modelling Task	3	4

Outline Syllabus

Review Predictive Modelling
Kohonen Self-Organising Maps (SOM)
Support Vector Machines
Review Binary Decision Trees
Model Ensembles
Bootstrap Aggegating (Bagging)
Boosting
Adaboost
Stumping
Random Forests
Stochastic Gradient Boosting
Hetrogenous Emsembles
Interpreting Model Ensembles
Case studies in Machine Learning & Predictive Analytics
e.g. Text Mining, Sentiment Analysis

Learning Activities

Lectures will introduce the underpinning theories of advanced analytics, while practical sessions will implement those theories in a practical manner.

Notes

This is a practical module that generates effective analytical modelling experience, thus developing real hands-on experience of data science applications.