College Dublin
Computing • IT • Business

Teaching Scheme

Programme Name & Stage:	MSc in Data Analytics - Feb 2024 - FT cohort
Module Title:	Machine Learning for Data Analytics
Semester:	1 (Feb – May 2024)
Lecturer:	Dr. Muhammad Iqbal

Assessment Weighting:

Integrated CA1 (Week --)	50%
Integrated CA2 (Week --)	50%

NOTE: This Teaching Scheme is intended as a GUIDE ONLY. It is possible that the topics/areas covered may be changed from time-to-time.

Week No.	Date Commencing	Major Topic(s) / Subject Area(s)	Notes
1	19th Feb 2024	Supervised, semi-supervised and unsupervised learning Machine Learning, Deep Learning and Reinforcement Learning CRISP-DM, KDD and SEMMA Tutorial 1 Practical	Aurélien Géron, 2019, 2nd Edition, Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, O'Reilly Media [ISBN: 978-1492032649]
2	26th Feb 2024	Classification and Regression Tutorial 2 Practical	
3	4th Mar 2024	Supervised Learning: Linear Regression (practical) Nearest Neighbour (practical) Tutorial 3 Practical	Andriy Burkov, 2019, The Hundred-Page Machine Learning Book, Andriy Burkov, [ISBN: 978-1999579500]
4	11th Mar 2024	Supervised Learning: Decision Trees (practical) Random Forest (practical) Tutorial 4 Practical	
5	18th Mar 2024	Supervised Learning: Support Vector Machine (SVM) (practical) Gaussian Naive Bayes (practical) Tutorial 5 Practical	
6	25th Mar 2024	**READING WEEK*** **(Tuesday 26th Mar – Friday 29th Mar)**	

7	1st Apr 2024	Unsupervised Learning: Clustering (practical) Dimensionality Reduction (practical) CASE STUDY Tutorial 6 Practical	College Closed – Mon 30th Oct – Public Holiday
8	8th Apr 2024	Semi-Supervised Learning: Natural Language Processing (practical) Tutorial 7 Practical	Introduction to Machine Learning with Python A Guide for Data Scientists, Andreas C. Müller and Sarah Guido, Copyright © 2017, O'Reilly.
9	15th Apr 2024	Unsupervised Learning: Clustering (practical) Dimensionality Reduction (practical) CASE STUDY Tutorial 6 Practical	
10	22nd Apr 2024	Semi-Supervised Learning: Natural Language Processing (practical) Tutorial 7 Practical	
11	29th Apr 2024	Validation and Optimisation: Validation (Re-substitution, Hold-out, K-fold cross-validation, LOOCV, Random subsampling, Bootstrapping…) (practical) Tutorial 8 Practical	
12	6th May 2024	Validation and Optimisation: Optimisation (loss functions/cost functions, Gradient Descent, Momentum, AdaGrad, RMSProp, Adam…) (practical)	
13	13th May 2024	Deep Learning: Artificial Neural Networks Types of Artificial Neural Networks Activation Functions in ANN Concept of Perceptron The perceptron Learning Rule Perceptron's training algorithm Design Issues in ANN and Gradient Descent CASE STUDY, Tutorial 9 Practical	Introduction to Data Mining (2nd Edition) January 2018, January 2018, Pearson, ISBN:978-0-13-312890-1.
14	20th May 2024	**Exams Period**	

Examination Period: Monday 20th May 2024 to Friday 24th May 2024 (inclusive). An exact Examination Timetable will be issued closer to the time.

**Although there are no classes scheduled during Reading Week, please note that this is not a Holiday period and it is possible that additional classes may be scheduled during a Reading Week, if necessary.*

*** During Revision Periods your lecturer may schedule an additional class, if this is necessary.*