Course descriptor F21DL

Course code	**F21DL**
Course title	Data Mining and Machine Learning
Credits	15
School	Mathematics and Computer Sciences
SCQF Level	11
Semester	1
Aims	• To introduce students to the fundamental concepts and techniques used in data mining and machine learning. • To develop a critical awareness of the appropriateness of different data mining and machine learning techniques. • To provide familiarity with common applications of data mining and machine learning techniques.
Syllabus	**Data Mining**: Basic concepts (datasets, dealing with missing data, classification, statistics), regression analysis, cluster analysis (k-means clustering, hierarchical clustering), unsupervised learning, self-organising maps, naïve Bayes, k-nearest-neighbour methods **Machine Learning**: decision tree learning, ensemble methods (bagging and boosting, random forests), deep learning architectures, support vector machines

Learning Outcomes	
Subject Mastery	• Extensive understanding of the data mining process. • Detailed understanding of the mathematical basis of machine learning. • Critical awareness of the appropriateness and performance of different techniques.
Personal Abilities	• Rational problem identification and definition. • Critical analysis and solution selection. • Thorough and robust preparation of testing strategies. • Reflection on system development and performance.

Assessment method	100% course work