Expanded outcomes:

1. Demonstrate an in-depth knowledge of modern data mining techniques
    a. Understand the value and applications of data mining in the real world
    b. Describe a variety of data mining methods, including data analysis, statistical methods, modelling and validation
    c. Critically discuss and explain the benefits and limitations of different data mining techniques
2. Apply data mining techniques for examining, processing and evaluating raw input data to discover, interpret and measure interesting patterns
    a. Define a data mining problem, evaluate methodologies and propose solutions (students may need to develop their own algorithms)
    b. Interpret and validate the data mining result
    c. Use data mining software packages to implement data mining solutions
3. Present data mining results in a form that non-technical audiences will find usable, relevant and intelligible
    a. Understand different visualization techniques
    b. Use software tools to present the mined results to non-technical audiences

Topics may include:

Introduction to data concepts (Classes, Data types, Instances and Attributes), Data preparation methods (Sampling, Training and Test datasets, Data cleansing, Feature Selection and Cross-validation methods), Data mining techniques (which may include Classifications, Clustering, Association rules, Ensemble Learning and Regressions) and Evaluation methods (which may include ROC curves, correlation, parametric and non-parametric tests of difference)

Assessment:

Students will be advised of all matters relating to summative assessment at the outset of the course. Overall course grades will represent a balanced assessment of achievement in relation to all stated learning outcomes.

Weighting	Nature of assessment	Learning outcomes
40%	Individual Assignment(s): Given a case study, design, develop and evaluate data mining techniques for solving problems	1, 2
60%	Group Assignment(s)*: Given a complex case study, design, develop and evaluate data mining techniques and present the mined results to non-technical audiences. **Marked in stages and individually.*	1, 2, 3

Learning and teaching approaches:

Topics may be taught in an integrated manner
Supervisor / student meetings / discussions
Collaborative and / or individual projects
Analysis of written, visual, aural and performance texts

Feedback:

Feedback is sought throughout the course using a range of assessment tools including:
Formal reflection, class forum and end of course survey

Learning resources required:

Specific readings will be provided during the course.