Ollscoil
Teicneolaíochta
an Oirdheiscirt

South East
Technological
University

Module Descriptor

Data Science in Practice (Computing and Mathematics)

Short Title: Data Science in Practice
Department: Computing and Mathematics
Credits: 5 **Level:** Advanced

Description of Module / Aims

The purpose is to advance the students skills in conducting business analytics on structured data and to introduce the student to the analysis conducted on unstructured data. Students will investigate data mining techniques such as predicting customer behaviour, performance management, simulation and optimisation of business processes. The student will conduct analysis to discover patterns and to predict future events or outcomes. The student will be introduced to the analysis of unstructured data such as text and web mining.

Programmes

		stage/semester/status
DATA-0017	BSc (Hons) in Software Engineering (WD_KDEVP_BI)	4 / 8 / M
COMP-0613	BSc (Hons) in Software Systems Development (WD_KCSDV_B)	4 / 2 / E
DATA-0017	BSc (Hons) in Software Systems Development (WD_KDEVP_B)	4 / 8 / E
DATA-0017	BSc (Hons) in Software Systems Practice (WD_KSOFP_B)	1 / 2 / M

Indicative Content

- Theory of advanced data mining methods
- Use of advanced data mining methods in the context of business analytics
- Data mining algorithms: Association Rules; Classification; Clustering;
- Implementation, evaluation and interpretation of results using advanced data mining techniques
- Fundamental of the analysis of unstructured data
- Introduction to Text and Web mining techniques

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Prepare results from an advanced analytics project using an appropriate Data Mining process.
2. Choose and apply appropriate data mining methods to a data set.
3. Evaluate results from data mining conducted on a data set.
4. Evaluate and determine appropriate advanced data mining techniques.
5. Appraise the use of analytics on unstructured data in relation to text and web mining.

Learning and Teaching Methods

- Lectures will introduce the fundamentals and concepts in the area. Labs will implement those concepts using data sets.
- In the labs, the student will prepare the data, perform analysis, evaluate the results and report on the findings.
- In the continuous assessment the student will apply what they have learned in the labs and lectures to a new data set within a business context.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	12	
Practical	36	
Independent Learning	87	

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
In-Class Assessment	30%	4,5
Assignment	70%	1,2,3,4

Assessment Criteria

<40%: Unable to interpret and describe key concepts of the Business Analytics domain.

40%–49%: Be able to interpret and describe key concepts of the Business Analytics domain, particularly advanced data mining techniques.

50%–59%: Ability to discuss key concepts of the advanced data mining techniques and ability to discover and integrate related knowledge in other knowledge domains.

60%–69%: Be able to solve advanced business analytics problems by experimenting with the appropriate skills and tools.

70%–100%: All the above to an excellent level. Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of appropriate skills and tools.

Supplementary Material(s)

- Delen, D. *Real-World Data Mining: Applied Business Analytics and Decision Making - See more at: http://www.pearsonhighered.com/educator/product/RealWorld Data Mining Applied Business Analytics and Decision Making.* NY: Pearson, 2015.
- Jank, Wolfgang. *Use R! Business Analytics for Managers.* NY: Springer, 2011.

Requested Resources

- Room Type: Computer Lab