



Title:	Unstructured Data & Visualis'n	APPROVED
Long Title:	Unstructured Data & Visualis'n	
Module Code:	DATA8003	
Credits:	5	
NFQ Level:	Advanced	
Field of Study:	Data Format	
Valid From:	Semester 1 - 2017/18 (September 2017)	
Module Delivered in	1 programme(s)	
Module Coordinator:	David Goulding	
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Module Description:	In data visualisation, data will be investigated using various visualisation and modelling techniques. More advanced visualisation concepts and tools for analysing multi dimensional data, large data sets and geospatial data will also be examined. In unstructured data analysis, the learner will examine how to organise and analyse both text based data forms and other unstructured data (e.g. web logs, web content, twitter). The learner will investigate the characteristics of unstructured data and how challenges in the area can be overcome using a variety of descriptive and analytical techniques.	
Learning Outcomes		
<i>On successful completion of this module the learner will be able to:</i>		
LO1	Investigate data using various visualisation and modeling theories and techniques.	
LO2	Use a variety of visualisation techniques and tools to solve data mining and analytics problems.	
LO3	Make observations and build a body of evidence to support a case or project.	
LO4	Organise and analyse non-numerical or unstructured data.	
LO5	Examine relationships in data; and combine analysis with linking, searching and modelling.	
Pre-requisite learning		
Module Recommendations		
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>		
13372	DATA8003	Unstructured Data & Visualis'n
Incompatible Modules		
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>		
No incompatible modules listed		
Co-requisite Modules		
No Co-requisite modules listed		
Requirements		
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>		
No requirements listed		
Co-requisites		
No Co Requisites listed		

Module Content & Assessment

Indicative Content
Data visualisation concepts Understand the various categories used in the field e.g. Information/data/scientific visualisation, infographics, visual analytics.
Data Visualisation traditional statistical approaches Histograms, boxplots, scatter plots; Analysing correlations and patterns between variables. Univariate, bivariate and multivariate ways of presenting data.
Advanced visualisation techniques Investigate computer based tools for visualisation and their features - dashboards, drop-down menus, interactivity. Use software to display the data e.g. R Shiny, Qlikview, Tableau, Rapidminer.
Unstructured data Understand the characteristics of unstructured data and how this impacts on analysis.
Organise data Using a variety of software (e.g. R, Rapidminer, NVivo) to gather (e.g. web-scrape) and organise unstructured data and explore its characteristics. Investigate various data cleaning techniques so that the data can be analysed further.
Explore data Use statistical and data mining techniques to create models so that meaningful analyse can be performed on unstructured data, e.g. TF-IDF, bag of words, concepts; as well as K-means clustering, K-Nearest Neighbour, Bayesian inference.

Assessment Breakdown	%
Course Work	100.00%

Course Work				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Practical/Skills Evaluation	Lab examination in visualisation.	1,2,3	25.0	Week 4
Project	Analyse a data set using appropriate visualisation techniques.	1,2,3	25.0	Week 8
Project	Analyse an unstructured data set and write a report on the findings.	3,4,5	50.0	Week 13

No End of Module Formal Examination

Reassessment Requirement
Coursework Only <i>This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.</i>

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Formal lecture	2.0	Every Week	2.00
Lab	Laboratory sessions	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Review of lecture notes and preparing for labs	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Formal Lecture	2.0	Every Week	2.00
Lab	Laboratory sessions	2.0	Every Second Week	1.00
Independent & Directed Learning (Non-contact)	Review of lecture notes and preparing for labs	4.0	Every Week	4.00
Total Hours				8.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				3.00

Module Resources

Recommended Book Resources

- Julie Steele, Noah Iliinsky, 2011, *Designing Data Visualizations* [ISBN: 1449312284]
- Nathan Yau, 2011, *Visualize This* [ISBN: 0470944889]
- Ben Fry 2007, *Visualizing data*, O'Reilly Media Sebastopol, CA [ISBN: 0596514557]

This module does not have any article/paper resources

Other Resources

- Website: RStudioR Shiny Tutorial
<https://shiny.rstudio.com/tutorial/>
- Website: QlikView Qlikview Tutorial
<http://www.tutorialspoint.com/qlikview/>
- Website: <http://www.qsrinternational.com/>
- Website: Brian Suda 2012, *The top 20 data visualisation tools*
<http://www.netmagazine.com/features/top-20-data-visualisation-tools>

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_BBISY_8	Bachelor of Business (Honours) in Information Systems	7	Elective