

H9DAPA: Domain Applications of Predictive Analytics

Module Code:	H9DAPA
Long Title	Domain Applications of Predictive Analytics APPROVED
Title	Domain Applications of Predictive Analytics
Module Level:	LEVEL 9
EQF Level:	7
EHEA Level:	Second Cycle
Credits:	5
Module Coordinator:	Vikas Sahni
Module Author:	Jenette Carson
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Master's degree or higher in a computing or cognate discipline.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Critically analyse advanced predictive analytics methodologies in order to assess best practice guidance when applied to complex data mining problems
LO2	Investigate and evaluate key concepts and advanced predictive analytics techniques and assess when to apply such techniques on complex datasets and practical problem domains.
LO3	Contextualise, research and utilise current data approaches, applications and technologies in order to develop predictive analytics strategies to address a variety of real world situations
LO4	Critically review and apply appropriate data mining research and assess research methods
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	A level 8 degree or its equivalent in any discipline

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Module Content & Assessment			
Indicative Content			
General Strategies Revisited Analytics and Predictive analytics, Big data and predictions, Applying PA, Credit Scores			
Deployment Business case for PA, domains where it is working, the DARPA challenge, Advertisement options			
Ethics Ethical issues of marketing analytics, HR analytics, Data aggregation and selling, Civil Rights and Big data, Predictive Policing			
Data Using Social media data, Insights from Consumer Behaviour, Financial Data, Healthcare etc., p-value, Importance of business meaning			
Modelling 1 Predictive modelling methods, Decision Trees, Overlearning			
Modelling 2 Classification and Regression trees			
Ensembles 1 Meta-learning, Recommender systems, Kaggle and Crowdsourcing			
Ensembles 2 Bagging, Improvement gains, Generalisations			
QA 1 QA systems, Natural Language Processing, Structured Data, Unstructured Collections			
QA 2 IBM Watson – history, now it works, applications in different domains			
Uplift 1 Persuasion modelling, Incremental modelling, Uplift decision trees			
Uplift 2 Applications – Upsell, Cross-sell, Customer Retention			
Assessment Breakdown			%
Coursework			100.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	Yes		
Assessment Description: Formative assessment will be provided on the in-class individual or group activities. Feedback will be provided in written or oral format, or on-line through Moodle. In addition, in class discussions will be undertaken as part of the practical approach to learning.			
Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	Yes		
Assessment Description: Project proposal			
Assessment Type:	Continuous Assessment	% of total:	40
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Project Design			
Assessment Type:	Continuous Assessment	% of total:	60
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Project Report and Presentation			
No End of Module Assessment			
No Workplace Assessment			
Reassessment Requirement			
Coursework Only This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.			
Reassessment Description The repeat strategy for this module is by repeat assessment/project that covers all learning outcomes.			

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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom & Demonstrations (hours)	24	Every Week	24.00
Tutorial	Other hours (Practical/Tutorial)	12	Every Week	12.00
Independent Learning	Independent learning (hours)	89	Every Week	89.00
Total Weekly Contact Hours				36.00

Module Resources	
<i>Recommended Book Resources</i>	
Siegel, E.. (2016), Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die, Wiley Press.	
<i>Supplementary Book Resources</i>	
Dean Abbott, Applied Predictive Analytics: Principle and Techniques for the Professional Data Analyst (Wiley, 2014).. John W. Foreman, Data Smart: Using Data Science to Transform Information into Insight (Wiley, 2013).. Gordon S. Linoff and Michael J. A. Berry, Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management (Wiley, 2011). Anasse Bari, Mohamed Chaouchi, and Tommy Jung, Predictive Analytics For Dummies (For Dummies, a Wiley Brand, 2014). Jeffrey Strickland, Predictive Modeling and Analytics (lulu.com, 2014).. Vijay Kotu and Bala Deshpande, Predictive Analytics and Data Mining: Concepts and Practice with RapidMiner (Morgan Kaufmann, 2014). John D. Kelleher, Brian Mac Namee, and Aoife D'Arcy, Fundamentals of Machine Learning for Predictive Data Analytics: Algorithms, Worked Examples, and Case Studies (The MIT Press, 2015)..	
<i>This module does not have any article/paper resources</i>	
<i>Other Resources</i>	
[Website], The Predictive Analytics Guide—articles, industry portals, and other resources; http://www.pawcon.com/guide [Website], The Predictive Analytics Times—industry news, technical articles, videos, events, and community; http://www.predictiveanalyticstimes.com [Website], The Prediction Book, http://www.thepredictionbook.com	
Discussion Note:	