

Short Title:	Data Science Applications APPROVED
Full Title:	Data Science Applications
Module Code:	ADSA H6015
ECTS credits:	10
NFQ Level:	9
Module Delivered in	1 programme(s)
Module Contributor:	Markus Hofmann
Module Description:	Module aims include: Apply state of the art business intelligence, data preparation and data mining techniques to a specific case study and dataset. Starting with a business objective and data, work through all stages of an appropriate methodology to extract knowledge from the data in accordance with the business objectives, and present the results to stakeholders in the appropriate language, highlighting how the knowledge learned can be used to add value to the business.
Course Extra Information	Indicative Syllabus: Based on CRISP-DM methodologies.
Learning Outcomes:	
<i>On successful completion of this module the learner will be able to</i>	
<ol style="list-style-type: none"> 1. Research appropriate business intelligence or data mining techniques for a specific problem domain 2. Select from, and apply, a range of advanced, state of the art, data analysis, data visualisation and data mining techniques to a practical case study 3. Understand and intrepet a business objective, and translate the business objective to business intelligence and data mining objectives 4. Identify possible risks and limitations of a data set in achieving a business objectives 5. Apply the appropriate business intelligence and data mining techniques to match a business objective 6. Present results to stakeholders in terms of the business objectives set, and how the information learned can be used to add value to the business 	

Module Content & Assessment

Indicative Content
<p>Business Understanding Evaluate the business objectives, and refining the objectives to achievable goals.</p>
<p>Data Understanding Identify potential, relevant data and how to access that data. Evaluate the data available to determine the quality and information content of the data set. Complete an initial data exploration of the dataset using statistical analysis and data visualisation techniques. Report on the quality of the dataset with respect to the business objectives.</p>
<p>Data Preparation Collect the data into one dataset. Research, evaluate and apply the appropriate data cleaning and preparation techniques to the dataset.</p>
<p>Data Analysis & Mining Research, evaluate and apply the appropriate data analysis and/or data mining techniques.</p>
<p>Evaluation Evaluate the results. Revise the pre-processing and analysis techniques used if necessary.</p>
<p>Reporting Report to stakeholders on the results on the project with respect to the business objectives, and how the information learned can be used to benefit the business.</p>

Indicative Assessment Breakdown	%
Course Work Assessment %	100.00%

Course Work Assessment %				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Project	Complete all stages of an appropriate methodology to analyse a dataset chosen by the student, and report on all work done. Direct regular supervision will be provided throughout the entire semester.	1,2,3,4,6	70.00	Sem 2 End
Presentation	The student is required to give an interim presentation on project progress	1,2	5.00	Week 26
Other	Students are asked to peer review each other's work.	4	5.00	Week 25
Written Report	Students are asked to write an academic style research paper summarising key aspects of the project's methodology, implementation and results.	6	20.00	n/a

No Final Exam Assessment %

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

ITB reserves the right to alter the nature and timings of assessment

Indicative Module Workload & Resources

Resources
<i>Recommended Book Resources</i>
<p>Hofmann, Kilnkenberg 2013, <i>RapidMiner: Data Mining Use Cases and Business Analytics Applications</i>, 1 Ed., Chapman and Hall/CRC [ISBN: 1482205491]</p> <p>Pang-Ning Tan, Michael Steinbach, Vipin Kumar 2013, <i>Introduction to Data Mining</i>, Pearson [ISBN: 1292026154]</p> <p>Ian H. Witten, Eibe Frank 2011, <i>Data mining</i>, Amsterdam ; Morgan Kaufman, [ISBN: 0-12-088407-0]</p>
<i>This module does not have any article/paper resources</i>
<i>This module does not have any other resources</i>

Module Delivered in

Programme Code	Programme	Semester	Delivery
BN_KADSA_R	Master of Science in Computing in Applied Data Science & Analytics	2	Mandatory