

## H7BSADM: Business Statistics and Analytics for Decision Making

Module Code:	H7BSADM
Long Title	Business Statistics and Analytics for Decision Making <b>APPROVED</b>
Title	Business Statistics and Analytics for Decision Making
Module Level:	LEVEL 7
EQF Level:	6
EHEA Level:	First Cycle
Credits:	5
Module Coordinator:	COLETTE DARCY
Module Author:	Isabela Da Silva
Departments:	School of Business
Specifications of the qualifications and experience required of staff	
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
<b>#</b>	<b>Learning Outcome Description</b>
LO1	Appraise the use of statistics and business analytics in cross functional and holistic decision making within a variety of business and management contexts.
LO2	Critique and apply statistical and analytical techniques in modelling business problems and developing conclusions about populations based on sample results.
LO3	Synthesise data and analyse business problems under conditions of uncertainty, formulate null and alternative hypotheses and exercise judgement in the resolution of business problems using hypothesis testing.
LO4	Evaluate and interpret relationships between variables through the use of correlation and regression analysis.
LO5	Use appropriate software in the application and interpretation of statistical methods and techniques and present findings/output in a professional and technical or nontechnical manner as required.
<b>Dependencies</b>	
<b>Module Recommendations</b>	
No recommendations listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Entry requirements</b>	As per programme requirements (outlined in 4.2.2 Minimum requirements for general learning)

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Module Content & Assessment			
Indicative Content			
<b>Introduction</b> Role and Evolution of Statistics and Analytics in Business Decision Making Sources of Statistical Data 'Big' Data and Business Intelligence Population and Sample Data			
<b>Using Samples to Make Decisions</b> Sampling Methods What is a Representative Sample? Introducing and Building a Probability Distribution The Central Limit Theorem Point estimates and confidence intervals for a mean Sampling and Error Sample Application of Content: Using sample data to make estimates about the population. For example, marketing data from loyalty club cards have been obtained. The average spending on product X as well as the variation on product X spending by 100 customers is estimated and inferences drawn concerning the average population spends and variances and how these statistics influence decision making on stock levels, pricing etc.			
<b>Probability Distributions</b> Binomial probability distribution Normal probability distribution Standardisation and probabilities under a normal curve Sample Application of Content: Using data on salary payments in company X to construct an appropriate distribution to represent the data. Assuming the data is normally distributed, demonstrate understanding of the process of standardisation and calculate probabilities using the standard normal distribution.			
<b>Hypothesis Testing</b> Introduction to Hypothesis Testing Hypothesis Testing Procedures One Sample Tests of Hypothesis The Student T Distribution Sample Application of Content: Selecting from a range of hypothesis tests to check the validity of a business statement(s) about a population parameter. For example candidates may be provided with a benchmark figure concerning hospital response rates by doctors in the surgical department and asked to test whether sample data supports the benchmark			
<b>Correlation &amp; Regression</b> Correlation & Covariance Coefficient Measuring and Interpreting the Correlation and Covariance coefficients Introduction to Regression Analysis Principles of Ordinary Least Squares Technique (OLS) Using Regression for Predictions Sample Application of Content: Exploring the relationship between crime and resulting police complaints and hence estimating the strength of the relationship, testing for spurious correlations and using the regression equation in prediction.			
<b>SOFTWARE APPLICATION:</b> The practical lab session will be dedicated to the use of software, for example MS Excel, in order to test for relationships between variables using graphics, correlation and hence regression analysis.			
Assessment Breakdown			%
Coursework			40.00%
End of Module Assessment			60.00%
Assessments			
Full Time			
Coursework			
<b>Assessment Type:</b>	Formative Assessment	<b>% of total:</b>	Non-Marked
<b>Assessment Date:</b>	n/a	<b>Outcome addressed:</b>	1,2,3,4,5
<b>Non-Marked:</b>	Yes		
<b>Assessment Description:</b> Formative assessment will be provided to learners through the use of short answer questions. In addition in class problems and discussions will provide an opportunity for formative learning and student feedback to be provided. Provision of individual feedback will be provided individually outside of lecture time or on line through Moodle.			
<b>Assessment Type:</b>	Project	<b>% of total:</b>	40
<b>Assessment Date:</b>	n/a	<b>Outcome addressed:</b>	1,3,5
<b>Non-Marked:</b>	No		
<b>Assessment Description:</b> Learners will be presented with a dataset and/or case study drawn from a business discipline (for example: European Social Survey data). Learners will be expected to work as part of a team. A number of questions will be presented to the learner(s) and they will be expected to evaluate, combine and synthesise the information in order to develop and apply the appropriate inferential statistics. They may be required to present a detailed report of the findings. Learners may be required to undertake a formal presentation defending their findings.			
End of Module Assessment			
<b>Assessment Type:</b>	Terminal Exam	<b>% of total:</b>	60
<b>Assessment Date:</b>	End-of-Semester	<b>Outcome addressed:</b>	1,4
<b>Non-Marked:</b>	No		
<b>Assessment Description:</b> The examination will be two hours in duration with learners required to answer two questions, each worth 50 marks. Each question will have multiple parts and will include both calculation and theory elements. All questions will be marked according to clarity and the ability to apply statistical and quantitative techniques to solve business problems. Learners are required to interpret findings and communicate both an understanding of the process undertaken as well as the findings uncovered in a technical and non-technical manner as required.			
No Workplace Assessment			
Reassessment Requirement			
<b>Repeat examination</b> <i>Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.</i>			
<b>Reassessment Description</b> The repeat strategy for this module is by examination. Learners will be afforded an opportunity to repeat the assessment(s) at specified times.			

## H7BSADM: Business Statistics and Analytics for Decision Making

Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom and demonstrations	24	Per Semester	2.00
Independent Learning	Independent learning	101	Per Semester	8.42
Total Weekly Contact Hours				2.00

Module Resources	
<i>Recommended Book Resources</i>	
Lind, D.A., Marchal, W.G. and Wathen, S.A. (2021), Statistical Techniques in Business and Economics, 18th ED. McGraw-Hill.	
<i>Supplementary Book Resources</i>	
<p>Camm, J.D., Cochran, J.J., Fry, M.J. and Ohlmann, J.W. (2021), Business Analytics (eTextbook version also available) Cengage Learning.</p> <p>Anderson, D.R., Sweeney, D.J., Williams, T.A., Camm, J.D. and Cochran, J.J. (2020), Modern business statistics with Microsoft Excel, Cengage Learning.</p> <p>Field, A, 2017, Discovering Statistics using IBM SPSS Statistics, SAGE Publications.</p> <p>Salkind, N.J. and Frey, B.B, 2021, Statistics for People who (Think They) Hate Statistics Using Microsoft Excel, Sage publications.</p> <p>Levine, D., Stephan, D.F. and Szabat, K.A, 2021, Statistics for Managers Using MS Excel, Pearson Education.</p>	
<i>Supplementary Article/Paper Resources</i>	
<p>Journal of Applied Quantitative Methods.</p> <p>Computational Statistics &amp; Data Analysis.</p> <p>Journal of Business and Economic Statistics.</p> <p>Journal of Financial and Quantitative Analysis.</p> <p>Review of Economics and Statistics.</p> <p>Oxford Bulletin of Economics and Statistics.</p> <p>Journal of Applied Statistics.</p> <p>Quantitative and Qualitative Analysis in Social Sciences.</p> <p>Quantitative Finance.</p> <p>Journal of Multivariate Analysis.</p> <p>Review of Quantitative Finance and Accounting.</p> <p>Review of Economic Analysis.</p> <p>Decision Analysis.</p>	
<i>Other Resources</i>	
<p>[Website], Jonathan Lambert NCI Mathematics Development and Support Videos,  <a href="https://www.youtube.com/MathsAndStats">https://www.youtube.com/MathsAndStats</a></p> <p>[Website], European Commission (Eurostat),  <a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a></p> <p>[Website], Central Statistics Office,  <a href="http://www.cso.ie">http://www.cso.ie</a></p> <p>[Website], Irish Stock Exchange,  <a href="http://www.ise.ie">http://www.ise.ie</a></p> <p>[Website], Economic &amp; Social Research Institute,  <a href="http://www.esri.ie">http://www.esri.ie</a></p> <p>[Website], European Social Survey,  <a href="https://www.europeansocallsurvey.org">https://www.europeansocallsurvey.org</a></p> <p>[Website], World Bank Data,  <a href="http://data.worldbank.org/">http://data.worldbank.org/</a></p> <p>[Website], Institute for Statistics Education,  <a href="http://www.statistics.com">http://www.statistics.com</a></p> <p>[Website], OECD Statistical Data,  <a href="https://data.oecd.org/">https://data.oecd.org/</a></p> <p>[Website], United States Department of Labour Bureau of Labour Statistics,  <a href="http://www.bls.gov/">http://www.bls.gov/</a></p>	
Discussion Note:	