Module specification

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Module Code	BUS7D9
Module Title	Multivariate Data Analytics
Level	7
Credit value	20
Faculty	Faculty of Social and Life Sciences
HECoS Code	100085
Cost Code	GABP

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc International Business and Data Analytics Management	Core pathway
MSc International Business and Data Analytics Management with Advanced Practice	Core pathway

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	20 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**20** hrs
Placement / work based learning	0 hrs
Guided independent study	180 hrs
Module duration (total hours)	200 hrs

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Initial approval date	8th August 2022
With effect from date	January 2023
Date and details of revision	
Version number	1

Module aims

Evolutionarily, the amount of data gathered in the world has exponentially exploded. This massive volume of data requires sophisticated numerical techniques to analyse these big data sets. There are three critical properties of big data known as the 3 Vs: volume, variety and velocity. Volume refers to the data amount, velocity refers to the processing speed and variety refers to the number of data types, such as time-series data, cross-sectional data and panel data. To answer these challenges, this module was created to enable students to acquire knowledge of multivariate statistics, which are essential tools for understanding an increased volume of primary, secondary and tertiary data as well as big data.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Critically discuss the core concepts and techniques in multivariate statistics.
2	Critically apply statistical tests on time series, cross-sectional and longitudinal data.
3	Critically evaluate multivariate statistic software packages such as SPSS, MPlus and SHAZAM to analyse primary, secondary and tertiary data.
4	Critically evaluate the ability to critically analyse and correctly interpret statistical outputs.
5	Critically evaluate multivariate statistical analysis on a set of numerical data where there are several measurements such as nominal data, ordinal data, interval data and ratio data.
6	Critically analyse primary, secondary and tertiary data using descriptive and inferential statistics.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment One (An Empirical Case Study using Secondary Data) (30%)

Using secondary data of time-series, cross-sectional or panel data available publicly from the Office for National Statistics, the International Monetary Fund, Yahoo Stock Exchange or any data on the Internet, you are required to estimate the movement of a macroeconomic variable for the following year. (**2,000 words).**

Assessment Two (An Empirical Case Study using <u>Primary Data</u>) (70%)

You are required to design survey questionnaires using Likert scales, continuous scales, semantic differential scales or other scales explained in class on any topic of their choosing. You must design at least two research objectives to be estimated by using Ordinal Regression, Logit Model or Probit Model. **(2,500 words).**

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1, 2, 3	Written Assignment	30%
2	4, 5, 6	Written Assignment	70%

Derogations

None

Learning and Teaching Strategies:

The learning and teaching strategy will consist of formal lectures and/or guest lecturers to present theory, principles and practices which will form the foundation of the learning outcomes. Students will be encouraged to interact and contribute to classroom learning as a means of developing critical skills, and to strengthen their knowledge and understanding of theory to practice. Lectures will be structured to encourage individual and group activities using real world case studies and live business examples enabling students to develop their collaborative, decision making, judging and evaluating skills, as well as key transferable employability skills. In addition, students will be encouraged to undertake self-directed study and further research on their chose area of study, as well as related topics, to acquire additional perspectives which will provide them with a greater understanding of the business topics within organisations and the wider environment.

Indicative Syllabus Outline:
- Linear, Non-Linear Regressions and Diagnostic Statistics
- Ordinal Regressions, Logit Model and Probit Model
- Factor Analysis and Structural Equation Modelling
- Mediation, Moderation, and Conditional Process Analysis
- Multilevel & Latent Growth Curve Modelling and Survival Analysis
- Special Topics One in Multivariate Statistics
- Special Topics Two in Multivariate Statistics

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update

Essential Reads

Field, Andy. (2017). ***Discovering Statistics Using IBM SPSS Statistics***, Fifth Edition, Paperback, London, UK, Publisher: SAGE Publications Ltd.

Other indicative reading

Asplen-Taylor, S. (2022), Data Analytics Strategy for Business: Unlock Data Assets and Increase Innovation with Results Driven Data Strategy, London, Kogan Page.

Wooldridge, Jeffrey M. (2019). ***Introductory Econometrics: A Modern Approach***, Seventh Edition, (MindTap Course List). Boston, USA, Publisher: Cengage Learning.

Journals

Data analytics
Statistics for business
Business insights and analytics
Business strategy
The economists

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes
Engaged
Enterprising
Creative
Ethical

Key Attitudes
Commitment
Curiosity

Practical Skillsets
Digital Fluency
Organisation
Communication