

## MODULE DESCRIPTOR

<b>MODULE TITLE</b>	Data Analytics		
<b>MODULE CODE</b>	MG4002 (L7)	<b>CREDIT VALUE</b>	10 credits / 5 ECTS
<b>SCHOOL</b>	SCHOOL OF BUSINESS AND MANAGEMENT		

### MODULE AIMS

In today's world surrounded by information technology, vast amounts of data are created and stored each day. The data itself is not information, unless it is processed in a way that extracts particular insights and values that can be used in a various ways. To do this, we need models and algorithms to collect, analyze, and evaluate data. This process of extracting information from the raw data is better known as data analysis.

This module seeks to teach students the fundamental concepts and techniques of Data Analytics. It sets out to provide insight into the 'roles' played by a data analyst and to balance data analytics techniques introduced through appropriate software with reporting modern data analysis in reproducible manner. As such this module aim to:

- provide a framework for developing the analytical skills for handling a range of data analysis methodologies;
- provide the tools and the technical skills to enable a range of data analysis methodologies (statistical analyses) to be undertaken;
- enable the intelligent reporting of the results of a data analysis to target audiences with diverse levels of numerate/statistical understanding;

provide a sufficient base to enable the pursuance of more complex data analyses.

### MODULE CONTENT

In this modules students will learn about the most important methods and algorithms for data analytics:

- Regression Modelling: M V (A(2) and (> 2) levels). M v M problem.
- Classification and Clustering Analysis: k-nearest neighbours; k-means clustering.  
or Forecasting: structures of time series and their modelling.

Fundamental assumptions and structures are introduced at the conceptual level allowing data analysis models to be constructed which are further developed into practical, working versions using the facilities offered by data analysis software e.g. R.

### INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1. Discuss the appropriate data structures for any particular analysis.
2. Identify appropriate basic data analysis tools to plan and implement an analysis for any particular set of research data.
3. Build statistical models for effective data analysis.
4. Provide a clearly presented report highlighting the key findings of an analysis for a particular set of research data according to the brief and taking into account the nature of the target audience.

### TEACHING METHODS

A combination of teaching approaches will furnish effective learning. These will include lectures, seminars and practical discussions.

Particular aspects of data analytics are introduced in the lectures and discussed in the seminar. Students are then expected to use their own time to deepen their skills and understanding of these aspects. To sustain effective learning the module adopts a 'hands on' approach. Students are encouraged to enhance their technical skills and theoretical knowledge by applying a range of data modelling procedures

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through use of R, a public domain language for data analysis. Students are given the opportunity to test their knowledge, both conceptual and practical, on a weekly basis through interactive practical sessions. The development of each student's skill set is measured through their assessed work.

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## **ASSESSMENT METHODS**

This module is assessed through an essay and an examination.