M.SC. BUSINESS ANALYTICS

COURSE DESCRIPTIONS

COURSE CODE: BUSA 6000
TITLE: Introduction to Business Analytics
CREDITS: 3

DESCRIPTION
This course introduces students to the field of business analytics, an area of business administration that considers the extensive use of data, methods, and fact-based management to support and improve decision making. It presents the fundamentals needed to understand the emerging role and value of business analytics in corporate environments. Using real-world case studies, students will develop skills in analysing business situations, and learn to identify and evaluate opportunities in which business analytics can be used to support the decision-making process and improve performance. Topics to be covered are inclusive of: the evolution of business analytics, descriptive analytics, predictive analytics, and prescriptive analytics.

COURSE CODE: BUSA 6001
TITLE: Computer Simulation
CREDITS: 3

DESCRIPTION
In this course, students will learn the fundamentals of computer simulation and how to build computer simulation models and use them to analyse management decision problems. They will be introduced to the theories and techniques of simulation. The main focus will be on discrete simulation events, although there will be some coverage of system dynamics. After completing this course, students will be able to develop a simulation model and run it using a simulation package or a spreadsheet.

COURSE CODE: BUSA 6002
TITLE: Data Preparation and Visualisation
CREDITS: 3

DESCRIPTION
Data gathering is often a tedious and arduous job. Once gathered, it typically includes mistakes, omissions, and inconsistencies that can significantly distort the results of data analysis. As a result, data preparation is an inevitable and vital step that needs to be carried out before analysing any large dataset. The goal of this course therefore is to introduce students to different tools and techniques designed for collecting data and preparing them for further analysis. The course will cover: obtaining data from the web, APIs, and databases in various formats, detecting errors in large datasets, and the basics of data cleaning. Additionally, it will develop students' data presentation skills. In particular, students will gain hands-on experience with a variety of visualization tools and techniques designed for transforming the results of performed data mining into a more meaningful and insightful visual representation.

COURSE CODE: BUSA 6004
TITLE: Deep Learning
CREDITS: 3

DESCRIPTION
This course examines the theoretical and practical deep learning techniques used in the analysis of large data sets. In this regard, students will not only be required to master deep learning theory, but also be able to apply in deep learning algorithms to real world problems. Students will practice all these ideas in Python and in TensorFlow. In addition, they will discuss case studies that involve Deep Learning for big data analytics. This course targets students who intend to pursue careers as data scientists work in the field of data analytics. Due to the data and technology intensive nature of the material, this course will be delivered primarily through face-to-face instruction and hands-on lab sessions. Finally, this class will culminate in an open-ended final project.

COURSE CODE: BUSA 6005
TITLE: Database Design and Management
CREDITS: 3

DESCRIPTION
This course introduces students to the major concepts, methodologies, tools and technologies that are required to analyse, design, develop and manage well-structured relational databases. In particular, students will also learn data modelling using entity-relationship diagrams. Furthermore, students will use database management systems (DBMS) to gain an appreciation of the concepts and practical applications of database management.

COURSE CODE: BUSA 6006
TITLE: Digital Analytics
CREDITS: 3

DESCRIPTION
This course is designed to develop students' conceptual and practical understanding of how to utilize digital data to drive business success. Specifically, it will expose students to an array of the most current digital analytics tools and methods as well as to the technical information necessary to: obtain and analyse digital data, turn data into insights and communicate insights into actionable recommendations. Upon successful completion of this course, students will be equipped with the skills necessary to implement digital analytics in an organizational context in order to support and achieve both strategic and tactical business objectives.

COURSE CODE: BUSA 6007
TITLE: Data Mining: Supervised and Unsupervised Learning
CREDITS: 3

DESCRIPTION
This course introduces students to the sophisticated methods and algorithms of supervised and unsupervised learning – two of the most important methodologies in data mining. It is designed to equip graduates with the knowledge and skills needed to understand, analyse, and derive insights from vast stores of digital information assets. Topics to be covered include: linear and logistic regression, support vector machines, neural networks, clustering, anomaly detection, dimensionality reduction, and recommender systems. At the end of the course students will not only possess an understanding of the fundamental concepts, principles, and techniques of supervised and unsupervised learning, but will also gain hands-on experience with major software tools and applications in the field and the practical know-how needed to effectively utilise the techniques learned to solve real- world data science problems.

COURSE CODE: COMP 6361
TITLE: Cloud Computing
CREDITS: 3

DESCRIPTION
The course exposes students to the important concepts, technologies and architectures that form the cloud computing paradigm. Topics that will be covered in this course include: fundamental concepts and models, cloud enabling technology, cloud infrastructure mechanisms, cloud security mechanisms, cost metrics and pricing models and service quality metrics and SLAs. Students who are pursuing careers as application developers, as web developers, or as system administrators; or those desirous of fostering a clear understanding of cloud computing, as well as the ability to clearly articulate the business case for cloud computing will benefit from this course. The delivery mechanisms used for this course include face-to-face lectures, online and in-class discussions, class presentations and hands-on labs.

COURSE CODE: LGSC 6000
TITLE: Logistics and Supply Chain Management
CREDITS: 3

DESCRIPTION
This course is designed to explore various concepts, strategies and techniques that are essential for successful management of supply chains. It encompasses all activities associated with the flow and transformation of goods and services through to the end-users. The course focuses on logistics, as it is an integral part of SCM which deals with the information and financial flows associated with these processes. A variety of examples, scenarios and case studies from real life supply chains will form the basis for this course.

COURSE CODE: LGSC 6003
TITLE: Operations Research I
CREDITS: 3

DESCRIPTION
This course is concerned with the use of deterministic operations research models to solve decision problems. It introduces students to the operations research methodology and, through the use of simple cases, it illustrates how mathematical modelling can be used to improve decision making generally and, in particular, in logistics and supply chain management.

TITLE: Operations Research II
CREDITS: 3
COURSE CODE: LGSC 6006

DESCRIPTION
This course is concerned with the use of stochastic operations research models to solve decision problems. It introduces students to the operations research methodology and, through the use of simple cases, it illustrates how mathematical modelling can be used to improve decision making generally and, in particular, in logistics and supply chain management

COURSE CODE: BUSA 6090
TITLE: Consulting or Applied Project
CREDITS: 3

DESCRIPTION
This course provides students with an opportunity to conduct a real-world analytics projects using data from sponsoring organisations. It will challenge students to leverage the skills they have obtained throughout the program to address an analytics challenge, bringing together their theoretical learning with practical experience. With support from an appointed faculty advisor, students in this course will have the opportunity to draw on their skills in the areas of data preparation, data management, modelling, and statistical analysis to solve a real-world business analytic problem faced by an organisation in the business community. It should be noted that *students in the Capstone course may be required to sign non-disclosure agreements (NDAs) in order to have access to client data.*

TWO (2) ELECTIVES FROM:
OR any course(s) within the specialisation streams

COURSE CODE: BUSA 6010
TITLE: Healthcare Informatics and Analytics
CREDITS: 3

DESCRIPTION
This course provides an introduction to healthcare informatics and analytics, and enables students to make optimal use of data, information, and knowledge to advance individual health, health care, public health, and health-related research. Students will also develop the capacity to apply informatics and analytics knowledge and skills to health-related problems. Accordingly, students will apply the course material through activities such as simple data analysis and visualization of clinical data, answering clinical questions using information retrieval methods, and performing simple association analysis of various biological matter. In addition, students will acquire knowledge of the basic building blocks for any health organization to effectively leverage data, business intelligence, and advanced analytics. Hence, students will be exposed to a full range of healthcare informatics and analytics as it is employed in today's workplace.

COURSE CODE: BUSA 6011
TITLE: Health Data Analytics
CREDITS: 3

DESCRIPTION
This course introduces students to techniques for extracting data and gleaning insights from health care data sets. Moreover, this course provides a sound, competency-based curriculum that addresses or rather reinforces students' prior knowledge of data analytics ranging from data acquisition from traditional and emerging data streams, to data aggregation methods, data mining algorithms, predictive computational modelling, and visualization techniques. Students can expect to develop a deeper understanding of the various methods, software tools, and topical expertise needed to discover meaningful patterns in health-related data, and effectively communicate their implications.

COURSE CODE: BUSA 6012
TITLE: Human Resource Analytics
CREDITS: 3

DESCRIPTION
This course will introduce students to the theory, concepts and business application of human resources research, data, metrics, systems and analyses. Furthermore, this course will facilitate students' understanding of the role and importance of human resource analytics. They will develop the capacity to track, store, retrieve, analyse and interpret human resources data to support organizational decision-making. Moreover, students will explore state-of-the-art techniques used to recruit and retain employees through the use of case studies and quantitative data analysis using statistical software tools. Finally,

students will learn how to gather and analyse instrumental human resource metrics, and how to effectively communicate these findings to support organisational decision-making.

COURSE CODE: ECON 6033
TITLE: Econometric Methods
CREDITS: 3

DESCRIPTION
This course builds on the undergraduate econometrics course to provide students with a range of econometric techniques and methods that can be applied in diverse environments including financial markets and business. The course in particular answers the what, why and how of methods and techniques of estimation useful in getting insights about real-life situations. The topics include regression analysis, maximum likelihood methods, generalized method of moments, time series analysis, panel data models, forecasting, rational expectation models, the econometrics of business cycles and introduction to Bayesian econometrics.

COURSE CODE: ECON 6050
TITLE: Mathematical Methods
CREDITS: 3

DESCRIPTION
Much of graduate economics analysis is presented using mathematical techniques. This course will therefore help students to effectively communicate in the language of economics, i.e. mathematics. Students taking the course would be exposed to most of the techniques often used by economists and start to develop models of their own. There will be an emphasis on the application of the techniques to economics problems.

MANDATORY WORKSHOP

COURSE CODE: BUSA 6092
TITLE: Project and Consultancy Skills Workshop
CREDITS: Not-for-Credit

DESCRIPTION
This workshop is designed to prepare students for professional consulting work. During the workshop, students will learn about the nuances of consulting, ranging from: problem-identification, framing problems, analysing issues, and developing solutions. Additionally, students will develop their written and oral communications skills, as well as their presentation and stakeholder management skills. Altogether, students will develop proficiencies in a range of competencies that will enable them to successfully engage in consultancy work.