

BSc (Hons) Business Statistics with Management – SH307

1.Objectives

This programme is designed to produce a class of business professionals conversant with rigorous statistical and quantitative techniques and able to apply their power in the business environment. Students will be trained in the analysis of data to evaluate risks and extract business intelligence that can give businesses a competitive edge in an increasingly tight playing field. This programme will pay special attention to the managerial function of businesses.

2.General Entry Requirements

In accordance with the University General Entry Requirements for admission to undergraduate degree Programmes.

3.Programme Requirements

Credit in English at SC/GCE ‘O’ Level **and**

Passes in two “A” level subjects including Mathematics - Preference will be given to candidates having at least a “B” in Mathematics

4. Programme Duration

	Normal	Maximum
Degree	3 Years	5 Years

5. Credits per Year

Maximum 48 credits, Minimum 18 credits, subject to regulation 4.

6. Minimum Credits Required for Degree Award: 103

Breakdown as follows:

	Credits from			
	Core Taught Modules	Project/ Dissertation	Electives	GEMS
Degree	81	10	6	6

7. Assessment

Each module will be assessed over 100 marks with details as follows (unless otherwise specified):

The continuous assessment will count for 20 – 30% of the overall percentage mark of the module (s).

Continuous assessment may be based on seminars and/or assignments and should include at least two (2) assignments/tests per module.

8. Submission Deadline for Dissertation

Four copies of the dissertation (three spiral-bound copies and one copy on disk) should be submitted to the Faculty/Centre Registry not later than the last working day of March of the academic year.

9. List of Modules – BSc (Hons) Business Statistics with Management

Code CORE	Module Name	Hrs/Wrk L+P	Credits
STAT 1131(1)	Mathematics for Statistics	3+0	3
STAT 1008Y(1)	Uncertainty and Inference	3+0	6
STAT 1009Y(1)	Statistical Reasoning and Practical Data Handling	3+0	6
STAT 2003Y(3)	Statistical Computing and Data Graphics	3+0	6
STAT 2004Y(3)	Statistical Inference and Decision Making	3+0	6
STAT 2005Y(3)	Survey methods and Sampling Techniques	3+0	6
STAT 2222(3)	Operational Research	3+0	3
STAT 3014Y(5)	Multivariate Analysis & Business Intelligence	3+0	6
STAT 3015Y(5)	Time Series Analysis and Business Forecasting	3+0	6
ECON 1215(1)	Economics	3+0	3
ECON 2190(3)	Managerial Economics I	3+0	3
MGT 1066(1)	Managerial Communications	3+0	3
MGT 1067Y(1)	Principles and Practices of Management	3+0	6
MGT 1203(1)	Marketing Fundamentals		
MGT 2061Y(3)	Human Resource Management	3+0	6
MGT 2086(3)	Marketing in Practice	3+0	3
MGT 3058Y(5)	Strategic Management	3+0	6
STAT 3000Y(5)	Dissertation	-	10
	GEM	-	6
ELECTIVES			
STAT 3016Y(1)	Stochastic Processes and Stochastic Finance	3+0	6
STAT 3017Y(5)	Generalised Linear Models and Survival Analysis	3+0	6
MGT 3066Y(5)	E-HR and Knowledge Management	3+0	6
MGT 3061Y(5)	Managing Quality	3+0	6
ECON 3131(5)	International Trade	3+0	3
ECON 3182(5)	Introduction to Risk Management	3+0	3

10. Programme Plan – Bsc (Hons) Business Statistics with Management

LEVEL I

Code CORE	Module Name	Hrs/Wrk L+P	Credits
STAT 1131(1)	Mathematics for Statistics	3+0	3
STAT 1008Y(1)	Uncertainty and Inference	3+0	6
STAT 1009Y(1)	Statistical Reasoning and Practical Data Handling	3+0	6
MGT 1066(1)	Managerial Communications	3+0	3
MGT 1067Y(1)	Principles and Practices of Management	3+0	6
ECON 1215(1)	Economics	3+0	3
MGT1203(1)	Marketing Fundamentals	3+0	3
	GEM	-	6

LEVEL II

Code CORE	Module Name	Hrs/Wrk L+P	Credits
STAT 2003Y(3)	Statistical Computing and Data Graphics	3+0	6
STAT 2004Y(3)	Statistical Inference and Decision Making	3+0	6
STAT 2005Y(3)	Survey Methods and Sampling Techniques	3+0	6
STAT 2222(3)	Operational Research	3+0	3
ECON 2190(3)	Managerial Economics I	3+0	3
MGT 2086(3)	Marketing in Practice	3+0	3
MGT 2061Y(3)	Human Resource Management	3+0	6

LEVEL III

Code CORE	Module Name	Hrs/Wrk L+P	Credits
MGT 3058Y(5)	Strategic Management	3+0	6
STAT 3014Y(5)	Multivariate Analysis and Business Intelligence	3+0	6
STAT 3015Y(5)	Time Series Analysis and Business Forecasting	3+0	6
STAT 3000Y(5)	Dissertation	-	10
ELECTIVES	CHOOSE 6 CREDITS FROM		
STAT 3016Y(5)	Stochastic Processes and Stochastic Finance	3+0	6
STAT 3017Y(5)	Generalised Linear Models and Survival Analysis	3+0	6
MGT 3061Y(5)	Managing Quality	3+0	6
MGT 3066Y(5)	E-HR and Knowledge Management	3+0	6
ECON 3131(5)	International Trade	3+0	3
ECON 3182(5)	Introduction to Risk Management	3+0	3

11. Outline Syllabus

STAT 1131(1) - MATHEMATICS FOR STATISTICS

Summation notation. Functions and their limits. Differentiation. Taylor series. Integration. Partial derivatives. Relative minima, maxima, saddle point. Double integral. Beta and Gamma integral. Applications of matrices.

STAT 1008Y(1) - UNCERTAINTY AND INFERENCE

The nature of uncertainty in business. Subjective and objective methods. The probabilistic framework. Probability distributions. Expectation and variance. Common discrete and continuous distributions. Applications in business. Bayesian approach.

Introduction to Statistical Inference: Point and interval estimation. Hypothesis testing.

STAT 1009Y(1) - STATISTICAL REASONING AND PRACTICAL DATA HANDLING

Statistical Thinking. Objectives of statistical analysis. Data Structures. Levels of measurement. Basic processing techniques: sorting, ranking, classification. Data summaries: rates, ratios, percentages, averages and measures of variation and skewness. The construction of indices and indicators. Graphical and Tabular analysis and presentation. Exploratory Data Analysis. The analysis of relationships. Elementary time series analysis and forecasting. The use of computers and computer software (EXCEL, MINITAB and SPSS) in implementing the above.

MGT 1066(1) – MANAGERIAL COMMUNICATIONS

Thinking strategically about communication; developing writing skills; developing presentation skills within a managerial setting; giving and receiving feedback; listening skills; working effectively in teams; managing meetings; persuasion and negotiation skills; interviewing skills; cross-cultural communication; Public Relations and the media; Electronic communications.

MGT 1067Y(1) - PRINCIPLES AND PRACTICE OF MANAGEMENT

The study of organisations; The environment of Organisations; Evolution of Management theory; Management concepts; Functional Areas of Management: Production, Finance, HR and Marketing, The Managerial functions of Planning, Leading, Organising, Controlling; Managerial Skills. Managing individuals in organisations: Managing differences; Motivation, Managing Groups and Teams: Group behaviour; Conflict and co-operation; Power and Politics; Leadership; Social Responsibility. Managing Structure and processes: Organisational structure; Job design; Restructuring, Communications, Careers, Change; Diversity; Knowledge Management. Evolution of Marketing, Marketing Mix, 4 Ps of marketing.

ECON 1215(1) - ECONOMICS

Economic problem; demand and supply; Market mechanism, Theory of production, market structure and firm, factor market, microeconomic issues and regulations, public goods and social welfare, International trade and National Income, Money and financial system, Exchange rate and Balance of payments, Macroeconomic objectives and tools. Overview of Mauritian economic problems, Impact of globalisation and liberalisation.

MGT 1203(1) - MARKETING FUNDAMENTALS

Introduces the foundation of marketing and its key concepts: the Marketing Concept, Customer Satisfaction and Customer Value. Topics covered will include: evolution in Marketing Management philosophy; the marketing environment (Internal and External environment); the marketing research process; Consumer and Organisational buying behaviour; Market segmentation, positioning and targeting; The Marketing mix: product, price, promotion and distribution strategy of firms; Social Responsibility and green marketing.

STAT 2003Y(3) - STATISTICAL COMPUTING AND DATA GRAPHICS

An introduction to R language. Numbers and Vectors. Objects, their modes and attributes. Ordered and unordered factors. Arrays and Matrices. List and Data frames. Grouping, loops and conditional execution. Writing functions. Statistical models in R. Kernel Density Estimation using R. Graphical Procedures in R. Bootstrap & Re-sampling.

Principles of good Graphics. Video Presentation of Hans Rosling. History of statistical Graphs. Traditional Statistical Graphs. An introduction to R graphics. Trellis Graphs. Bubble Plot. Graphing Categorical Data using Mondrian. Graphing of 3 Dimensional Data in R.

STAT 2004Y(3) - STATISTICAL INFERENCE AND DECISION MAKING.

Properties of estimators. Methods for deriving confidence intervals. Hypothesis testing. Likelihood ratio tests. Inference for ANOVA. Simple random effects model. Bayesian inference: the incorporation of prior information in the inferential process.

Bayesian decision theory : the integration of prior information, data and cost information. Utilities. Decision trees. Applications.

STAT 2005Y(3) - SURVEY METHODS AND SAMPLING TECHNIQUES

Data collection strategies. The advantages of sampling. Sampling and non sampling errors. Stages in a sample survey. Alternative methods of administering a survey questionnaire. The design of survey questionnaires. Criteria for choosing sampling schemes. Simple random sampling. Stratified sampling. Systematic sampling. Cluster sampling. Multistage sampling. Estimates of means and proportions and their precision under alternative sample designs. Ratio and Regression estimators. Surveys of attitudes and opinions. Attitude scaling. Sample surveys in business, marketing and auditing.

STAT 2222(3) - OPERATIONAL RESEARCH

An introduction to Operational Research. Linear Programming. The Theory of Simplex Method. Duality Theory and Sensitivity Analysis. Game Theory. Waiting Time Models. Non Linear Programming. Queuing Theory. Inventory Theory.

ECON 2190(3) - MANAGERIAL ECONOMICS I

Introduction to Managerial economics. Demand analysis and consumer theory, Production and costs: the traditional theory of firms, theories of oligopoly, alternative theories of the firm. Pricing Policy and practices.

MGT 2086Y(3) – MARKETING IN PRACTICE

Marketing concepts and practices; Introduction to the 7Ps of Marketing; Changing marketing environment; Marketing Research Methods; Importance and relevance of STP; Product & the PLC; Consumerism and Customer Relationship Marketing; Social Responsibility and Green Marketing; Issues related to Global Marketing Management; Emergence of Internet Marketing. Lectures will be supplemented with mini case studies, seminars related to the business sector.

MGT 2061Y(3) - HUMAN RESOURCE MANAGEMENT

Evolution of HRM, HRM policy goals, SHRM - HRM and organisational performance, Individual performance - attitudes and behaviour, Organisational citizenship behaviour and organisational culture, Psychological contracts, Organisational justice, Job redesign and team working, Human resource planning, Recruitment and selection, Performance appraisal and management, Reward management, Training and development, Employee relations. International human resource management - management of expatriates, cross cultural management, Comparative human resource management (US, EU, Japan, Asia-Pacific, etc), Public sector HR (New public management), Criticisms of HRM, Case Study and seminars.

MGT 3058Y(5) - STRATEGIC MANAGEMENT

The international environment from 1890 to now: a critical analysis; An assessment of the evolution of the mauritian economy since 1968; History of strategy since the 19th century: from industrial capitalism to financial capitalism; Strategic segmentation: The different levels of decision making in the Strategy Management Process, SWOT analysis: The Resourced Based Theory of the Firm and the definition of competitive advantage; Clusters and the new economics of competition; Decision tools; Growth strategies, competitive strategies & functional strategies; Strategy implementation and the organisational structure; Conflict management; The benchmarking process: Implementing change & gaining commitment; Identity of the firm, The Agency Theory, Corporate Governance, Social Responsibility & Ethics, Leadership, Crisis management; Evaluation & control, Case study techniques.

STAT 3014Y(5) - MULTIVARIATE ANALYSIS AND BUSINESS INTELLIGENCE

Distribution in several dimensions. Multivariate Normal distribution. Inference. Exploring multivariate data. Principal Component Analysis. Factor analysis. Discriminant Analysis. Multidimensional scaling. Conjoint analysis.

Introduction to Data Mining. Data preprocessing. Exploratory Data Analysis. *Classification*: Decision Trees and Model Evaluation, Neural Networks. *Association*: Market Basket Analysis. *Clustering*: Hierarchical and k-Means Clustering. An overview of anomaly detection.

STAT 3015Y(1) - TIME SERIES ANALYSIS AND BUSINESS FORECASTING

Examples of time series. Time series plot. Model-building strategy. Classical trend and seasonal model. Additive and multiplicative models. Decomposition. Exponential smoothing. Estimation. Forecasting using Holt-Winters method. Time series and stochastic processes. Autocovariance function. Random walk. Moving Average. White Noise. Stationarity. Models for stationary time series : general linear process, MA processes. AR processes. Invertibility. Box-Jenkins methods. ARIMA and SARIMA processes. Models for non-stationary time series. Differencing. Model specification. Properties of sample acf and pacf. Nonstationarity. AIC criterion. Model Estimation and diagnostics. Residual analysis. Box-Pierce and Ljung-Box statistics. Forecasting. Using R Statistical Language for time series analysis.

STAT 3000Y(5) - DISSERTATION

At the end of the third year of the programme, students will be required to submit a project dissertation.

The title of the dissertation has to be approved by the Department of Economics and Statistics and a Project Supervisor identified by the Programme Co-ordinator. The dissertation length should be in the range of 8000–12000 words.

STAT 3016Y(5) - STOCHASTIC PROCESSES AND STOCHASTIC FINANCE.

Random variables and stochastic processes. Discrete time Markov chains (DTMC). Classification. Stationary distribution. Random walks. Simple applications of DTMC's. Counting processes and Poisson Processes. Non-homogeneous PP and Compound PP. Branching processes.

A simple market model. Risk-Free Assets. Risky Assets. Discrete Time Market Models. Portfolio Management. Brownian Motion. Stochastic differential equations. Elementary Itô calculus. The Black Scholes model.

STAT 3017Y(5) - GENERALISED LINEAR MODELS AND SURVIVAL ANALYSIS

Limitations of the general linear model. Scope and versatility of the generalised linear model. The exponential family of densities. Estimation of generalised linear models and hypothesis testing including use of relevant software. Logit, Probit, log-log and Poisson regression with business applications. Log linear analysis of multidimensional contingency tables. Multinomial response models. Survival models: Survival time. Hazard function. Cumulative hazard function. Censoring. Accelerated Life Models. Proportional Hazards Model. Exponential and Weibull Models. Time varying covariates. Time dependent effects. Business and actuarial applications.

MGT 3061Y(5) - MANAGING QUALITY

Introduction to Quality. Total Quality Management concept and philosophies. Kaizen. Total Quality Culture. Leadership for Quality. Planning for Quality. Organising for Quality. Business Excellence Model – MBNQA, EFQM, Deming Prize. Quality Management Systems: ISO 9000. Quality System Audit. Quality

tools and techniques for process improvement. Quality of Services. Teamwork for Quality. Communications and training for Quality. Benchmarking. Cost of Quality. Statistical Process Control. Implementing TQM.

MGT 3066Y(5) - e-HR AND KNOWLEDGE MANAGEMENT

e-HR and the eWorkplace, HRM policy goals, Evolution of HRM and IT, IT enabled HR, New HR paradigm – IT effects on HR, Virtual Organisation and remote management, HR shared services, HR Call Centre Management, Web-based HR (Recruitment and Selection, HRD, Employee Relations, etc.), Criticisms of Computer mediated workplace and HR outsourcing, Case study and Seminars. Knowledge management and intellectual capital, Business strategy and KM strategy, KM infrastructure, People – HRM and KM link, Processes – GODD and knowledge transfer, Enabling technology, Sharing culture, implementing KM, Case study and seminars.

ECON 3131(5) – INTERNATIONAL TRADE

International Trade Theories: Ricardian and Heckscher-Ohlin Models. Offer Curves, Trade, Imperfect Competition and Economies of Scales: Intra-Industry Trade, International Factor Movements and FDI. Intertemporal Trade. Strategies and Policies, Instruments of Protection, Effects of Protection on Trade and Welfare, Dumping.

ECON 3182(5) – INTRODUCTION TO RISK MANAGEMENT

Sources and Types of Risk: Hedging Techniques. Foreign Exchange Markets. Foreign Exchange Exposure. International Techniques of Managing Forex Risk: Introduction to Forward and Futures Markets. Swaps: Interest Rate Currency and Commodity Swaps. Commodity Futures. Introduction to use of Options in Risk Management.

April 2010