



UNIVERSITY
of
TECHNOLOGY,
MAURITIUS

School of Business Management and Finance

BSc (Hons) Risk Management with Business Intelligence

PROGRAMME DOCUMENT

Version 1.0

RMBI v1.0

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BSc (HONS) RISK MANAGEMENT with BUSINESS INTELLIGENCE

A. Programme Information

Mauritius is poised to make its corporate and public sector one of the leading sectors of the economy. In this respect the Government has been adopting a series of incentives measures to boost up the economy. Business Intelligence is about making use of data. It is a process that aid corporations to develop business strategies through gathering, storing, analysing and converting raw corporate data into useful resources (answers) for decision – making. In this connection one of the domains that Business Intelligence could be applied to is Risk Management. Managing uncertainty may seem a contradiction, but this is the challenge for corporate leaders each and every day as they set out to secure the future.

B. Programme Aims

The degree aims to produce graduates who will be future leaders in corporate and public sectors. It equips students with the academic knowledge to operate in the increasingly competitive world of financial markets. The Programme is predominantly work – oriented and is designed to meet the exigencies of the work place. It is intended to provide knowledge, understanding and intellectual skills, together with practical skills relating directly to the subject and a range of transferable skills that will equip candidates for a career in jobs related to Risk Management and Business Intelligence, such as Risk officer, Risk Analyst, Risk Manager, Database Marketing Analyst, etc.

C. Programme Objectives

The Program is a first initiative to integrate Risk Management and Business Intelligence. Responding to new needs in the business world, its enterprising interdisciplinary approach builds and synthesizes statistical, mathematical, financial, and information system techniques and tools to develop innovative professional skills. After successful completion of the program, students are expected to develop knowledge applying to Risk Management model and statistical techniques to quantitatively assessed risk ,critical business sense relating to management and finance, the skill to study a problem and model a solution using specialized statistical and Risk Management methods, solve problems using soft tools, e.g. carrying out operations in database, an understanding of the steps involved in the modelling process and how to carry out these steps in solving business problems.

PART I - Regulations

D. General Entry Requirements

As per UTM'S Admissions Regulations, and 'Admission to Programmes of Study at Degree Level'.

E. Programme Entry Requirements

- (i) Cambridge School Certificate, with credits in subjects including English and Mathematics
- and (ii) Cambridge Higher School Certificate with at least 2 'A' level subject. Mathematics at advance level is a prerequisite.

F. Programme Mode and Duration

Full Time: 3 years

Part Time: 4 1/2 years

Each academic year includes two semesters of 15 weeks each (excluding the Exam period).

G. Teaching and Learning Strategies

The programme will employ a wide variety of teaching methods, including lectures, individual or group projects, presentations, workshops, case studies, and talks by guest speakers. Self learning will be the key feature of the programme, enabling students to explore, investigate and research into various topics, interact with practitioners, and work in teams on projects.

H. Student Support and Guidance

In addition to traditional lectures, groups tutorials or individual tutorials are arranged for students.

I. Attendance Requirements

As per UTM's Regulations and Policy.

J. Credit System

Modules carry 3 or 4 credits as per the programme structure. Irrespective of the number of credits allocated, each and every module will be assessed on 100 marks. Modules with 4 credits must compulsorily involve submission of at least **two** assignments. The dissertation will carry 300 marks (9 credits).

Please note that the modules will only be offered if there is a minimum of 10 students.

Exit points :

Minimum no. of credits required for a:

Certificate = 32

Diploma = 67

Degree = 108

K. Student Progress and Assessment

For the award of the Degree, all modules must be completed overall with passes in the examinations, coursework and other forms of assessment.

The modules will be assessed as follows (unless otherwise specified):

- written examinations up to 2-hours' duration contributing to 70% of the total marks
- Continuous assessment carrying 30% of total marks. Continuous assessment can be based on seminars and/or assignments or class tests.
- Module DBT 3102 Database System will be based on 40 % project work and 60% exams

Maximum marks attainable:

Level 1	900
Level 2	900
Level 3	1100

Grading

Grade	Marks x (%)
A	$x \geq 70$
B	$60 \leq x \leq 70$
C	$50 \leq x \leq 60$
D	$40 \leq x \leq 50$
F	$x \leq 40$
A-D	Pass
F	Fail

L. Evaluation of performance

The percentage mark at Level 1 contributes a 20% weighting towards the degree classification.

The percentage mark at Level 2 contributes a 30% weighting towards the degree classification.

The percentage mark at Level 3 contributes a 50% weighting towards the degree classification.

M. Award Classification

$y \geq 70$	1st Class Honours
$60 \leq y < 70$	2 nd Class 1st Division Honours
$50 \leq y < 60$	2 nd Class 2 nd Division Honours
$45 \leq y < 50$	3rd Class Honour
$40 \leq y < 45$	Pass Degree
$y < 40$	No Award

N. Programme Organisation and Management

Programme Director:

Programme Coordinator:

Part II - Programme Structure

O. Programme Name– Full Time (Version 1.0)

PROGRAMME STRUCTURE AND PLAN

YEAR 1									
Semester 1				Semester 2					
Code	Modules	Hrs/Wk		Credits	Code	Modules	Hrs/Wk		Credits
		L	T				L	T	
MGMT 1102	Business Management	2	1	3	QUAN 1102	Statistics	2	1	3
ECON 1101	Economics	2	1	3	ACCF 1117	Accounting for Finance	2	2	4
QUAN 1202	Quantitative Methods	2	2	4	ACCF 1302	Equity and fixed income	2	2	4
ACCF 1201	Principles of Finance	2	1	3	MGMT 1128	Business Risk Management	2	2	4
QUAN 1302	Introduction To Calculus and Linear Algebra	2	2	4					
→ Start of Level 1				Finish of Level 1→					

YEAR 2									
Semester 1				Semester 2					
Code	Modules	Hrs/Wk		Credits	Code	Modules	Hrs/Wk		Credits
		L	T				L	T	
MGMT2704	Enterprise Risk Management	2 + 2		4	ACCF2204	Corporate Finance	2 + 2		4
MGMT 2118	Ethics, CSR and Governance	2 + 1		3	QUAN 2415	Research and statistical Method	2 + 2		4
ACCF 2304	Financial Services and Corporate Law	2 + 2		4	ACCF 2227	Risk Management and Investment	2 + 2		4
ECON 2501	Introductory Econometrics	2 + 2		4	MGMT 2702	Strategic Risk Management	2 + 2		4
QUAN 2303	Investment Mathematics	2 + 2		4					
→ Start of Level 2				Finish of Level 2 →					
YEAR 3									
Semester 1				Semester 2					
Code	Modules	Hrs/Wk		Credits	Code	Modules	Hrs/Wk		Credits
		L	P/T				L	T	
DBT 3102	Database System	2 + 2		4	QUAN 3304	Financial Engineering	2 + 2		4
MGMT 3710	Risk Management and Business Intelligence	2 + 2		4	ACCF3228	Financial Economics	2 + 2		4
MGMT 3703	Corporate Operational Risk Management	2 + 2		4	MGMT 3711	Advanced Data Mining for Risk Management and Business Intelligence	2 + 2		4
ECON 3601	International Business Environment	2 + 2		4	MGMT 3302	Strategic Business Planning and Management	2 + 2		4
DISS 3000	Dissertation				DISS 3000	Dissertation			9
→ Start of Level 3				Finish of Level 3 →					

P. Programme Name – Part Time (Version 1.0)

PROGRAMME STRUCTURE AND PLAN

YEAR 1		Semester 1			Semester 2		
Code	Modules	Hrs/Wk	Credits	Code	Modules	Hrs/Wk	Credits
MGMT 1102	Business Management	2 + 1	3	MGMT 1102	Introduction To Calculus and Linear Algebra	2 + 2	4
ECON 1101	Economics	2 + 1	3	QUAN 1102	Statistics	2 + 1	3
QUAN 1202	Quantitative Methods	2 + 2	4	ACCF 1201	Principles of Finance	2 + 1	3
Start of Level 1							
YEAR 2		Semester 1			Semester 2		
Code	Modules	Hrs/Wk	Credits	Code	Modules	Hrs/Wk	Credits
ACCF 1302	Equity and fixed income	2 + 1	3	QUAN 2303	Investment Mathematics	2 + 1	3
MGMT 1128	Business Risk Management	2 + 1	3	MGMT 2704	Enterprise Risk Management	2+1	3
ACCF 1117	Accounting for Finance	2 + 2	4	ACCF2304	Financial Services and Corporate Law	2 + 1	3
Finish of Level 1					Start of level 2		
YEAR 3		Semester 1			Semester 2		
Code	Modules	Hrs/Wk	Credits	Code	Modules	Hrs/Wk	Credits
		L T				L T	
ECON 2501	Introductory Econometrics	2 + 2	4	ACCF 2204	Corporate Finance	2 + 2	4
MGMT 2118	Ethics, CSR and Governance	2 + 1	3	QUAN 2415	Research and Statistical Method	2 + 2	4
ACCF 2227	Risk Management and Investment	2 + 2	4	MGMT 2702	Strategic Risk Management	2 + 2	4
Finish of Level 2 →							

YEAR 4				Semester 1				Semester 2			
Code	Modules	Hrs/Wk		Credits	Code	Modules	Hrs/Wk		Credits		
		L	P/T				L	T			
DBT 3102	Database System	2+2		4	ECON 3601	International Business Environment	2+2		4		
MGMT 3710	Risk Management and Business Intelligence	2+2		4	QUAN 3304	Financial Engineering	2+2		4		
MGMT 3703	Corporate Operational Risk Management	2+2		4	MGMT 3302	Strategic Business Planning and Management	2+2		4		
					DISS 3000	Dissertation*					

→ Start of Level 3

Year 5				
Semester 1				
Code	Modules	Hrs/Wk		Credits
		L	T	
MGMT 3711	Advanced Data Mining for Risk Management and Business Intelligence	2+2		4
ACCF3228	Financial Economics	2+2		4
DISS 3000	Dissertation*			9

Finish level 3→

*Dissertation starts in semester 2 of Year 4 and Credits are earned at the end of Semester 1 of Year 5

Q. MODULE OUTLINE

LEVEL 1, SEMESTER 1

MGMT 1102 Business Management

An introduction to Management: management processes, levels of managers, roles and skills of managers, nature of managerial work, scope of management, Role of theory and history in management, Different management perspectives, Environmental context of management, Basic elements of planning and decision making, Leading process: Leadership, motivation, human resources management, group dynamics and team building. Control for business performance, Learning Organisation. Good Governance.

ECON 1101: Economics

The Economic Problem: Scarcity and Choice, Theory of Demand and Supply, The Price System, Costs of Production, Market Structures, National income and economic growth, Inflation and Unemployment, Banking and Monetary Policies, Taxation and Fiscal policies, International Trade

QUAN 1202 Quantitative Methods

Elementary concepts in Mathematics; Fundamentals of Decision Theory and Decision Tree; Linear Programming Models: Graphical and Simplex Methods; Transportation and Assignment Models; Network Analysis; Queuing Theory; Markov Processes; Mathematics of Finance; Simulation Modelling

ACCF 1201: Principles of Finance

Present Value Calculation, Time Value of Money, Annuities; IRR; Source of Finance: Short and Long term financing; Valuation of bonds and other securities; Definition of Financial risk, Risk and Return Analysis; Diversification Principles, Capital Asset Pricing Model; Stock Market, Forms of market efficiency

QUAN 1302: Introduction to Calculus and Linear Algebra

Ways to represent a function, Exponential functions, Limit of a function, Continuity, Limits at infinity: horizontal asymptotes, The derivative as a function, Derivatives of Polynomials & Exponential functions, Product & Quotient rules, Derivatives of Trigonometric functions, Chain rule, Implicit differentiation, The Laplace transform, The inverse Laplace transform, Applications to differential equations, Fourier series and integrals, Vector spaces and subspaces, Linear transformations, Eigenvalues and eigenvectors, Inner products, The Gram-Schmidt process, Orthogonal transformations.

LEVEL 1, SEMESTER 2

QUAN 1102 Statistics

Descriptive Statistics; Probability Concepts; Random Variables; Probability Distributions: Binomial, Poisson and Normal; Estimation with Confidence Intervals; Hypothesis Testing; Chi-Square Tests; Analysis of Variance; Simple Regression and Correlation Analysis; Time Series Analysis.

ACCF 1117 Accounting for Finance

Regulatory framework of Accounting: Legal and Professional framework for financial reporting International standard setting process The role of Accounting information Recording and Summarising transactions Accounting concepts and preparation of financial statements; Company Accounts and Basic Group Accounts Understanding Published Annual Reports; Cash flow statements and requirements of IAS 7 for single entities. Accounting Ratios Analysis and Interpretation; Cost Accounting system, Element of Costs, Classification and Costs behaviour Cost Allocation: Traditional approach and Activity based Costing. Costing Principles, Contribution analysis to aid internal users in decision making

ACCF 1302 Equity & Fixed Income

Organisation & functioning of securities market; security market indexes; Efficient capital market; Market Efficiency & anomalies; industry and company analysis; price multiples; Features of debt securities risk associated with investing in bonds; Overview of bond sectors and instrument; understanding of yields spreads and Analysis and valuation; Yield measures; spot rates and forward rates.

MGMT 1128 Business Risk Management:

Defining Risk, the evolution of business risk The classification of risk, the role of risk management in business, Organisations and their environment resource dependency and value creation, Organisational functioning in response to risk,risk and strategy under uncertainty, focus strategies, strategic options, avoiding crises, contingency planning for crises, managing a crisis, profiting from crises

LEVEL 2, SEMESTER 1

MGMT 2704 Enterprise Risk Management

This unit offers an integrated and comprehensive analysis of how enterprise risk management is a business process within an organisation. Particular focus is given to the key role of corporate governance and a strategic risk management framework is explored. Topics include the evolution of enterprise risk management, linking business strategies to risk management, risk culture, identifying, measuring and monitoring risks and optimising risk management. Case studies will be used to complement other learning strategies.

MGMT 2118 Ethics, CSR and Governance

Introduction to CSR, ethics and Governance: Introduction, Managing Business Partners, Society & business, Corporate Governance, Ethical Decision making, Assessing social Performance, Globalisation and Ethical standards, Corporate Scandals and Best practices

ACCF 2304 Financial Services and Corporate Law

The banker-customer relationship and the rights and duties of each party; Types of customer, such as individuals, joint accounts, minors, executor and trustees, partnerships and limited companies ;Legal principles affecting lending; Cheques and payment systems; The law relating to cheques and other payment systems; Insolvency and security; The Banking Act; Financial Services Development Act; The Company's Act; Incorporation, constitution, directors' duties; Minority protection, Winding up of Companies

ECON 2501: Introductory Econometrics.

What is econometrics? Methodology of econometrics, Types of Econometrics, Single equation regression model Two Variable regression analysis, Classical Normal Linear regression Model, Two Variable Regression, interval

estimation and Hypothesis testing, Multiple regression Analysis; estimation and inference, Dummy Variables Multicollinearity and Autoregression

QUAN 2303 Investment Mathematics

Investment valuation, Capital gains tax, Real returns, Index-linked bonds, Yield curves, Spot and forward interest rates, Future contracts, Stochastic interest rate models, Immunization Generalized cash flow models, Financial transactions, Time value of money, Interest rates and discount rates, Annuities, Continuous payments, Equation of value, Loans, Project appraisal Arbitrage and forward contracts, financial derivatives, Risk models

LEVEL 2, SEMESTER 2

ACCF 2204 Corporate Finance

Shareholder's wealth; Project Evaluation, Valuation of financial instruments; Risk and Return – the CAPM and Arbitrage Pricing Theory; Derivative assets; Efficient markets- theory and empirical evidence; Capital structure; MM theory, agency costs theory and Signaling theory; Dividend theory, Dividend Valuation Model; Mergers and acquisitions

QUAN 2415 Research and Statistical Methods

Introduction to Research Methods, Formulating the research proposal,- Literature Review Planning the Research Process, Approach & Research Strategy : Research Ethics, Writing and presentation of report. Application of Statistical Methods: Selecting Samples Collecting Data Hypothesis testing; Classical Linear Regression Model; Single Equation Regression Model-Estimation and Inference, Application using softwares

ACCF 2227 Risk Management and Investment

Risk management as a process, Risk governance, Identifying risk, measuring risk, managing risk, Hedging with futures or forward currency contracts, insuring and hedging with options, other methods for managing currency exposures, Strategic & tactical currency management, risk management applications of derivatives, Risk management application of Option Strategies, Risk management applications of swap strategies.

MGMT 2702 Strategic Risk Management

Increasing Risks in the Global Economy, What is Risk Management? Why do we do Risk Management? Risk Management - A Board Issue - A Shareholder Issue - A Regulatory Issue - A Customer Issue ,What is Strategy? Strategic Risk and Strategic Risk management? Modern Risk Management – Frameworks, Governance & Organization Increasing Risks in the Global Economy , Modern Risk Management – Frameworks, Governance & Organization The Modern Model of Risk Management, Risk Management Framework, Risk Management Reporting, Monitoring and Compliance ,Risk Management Governance , Risk Management Culture , Risk, Return and Remuneration , Risk Appetite and Tolerances, Risk Culture in Business Units

LEVEL 3, SEMESTER 1

DBT 3102: Database System

Overview of Relational Database System, Entity Relationship Diagram, SuperType-SubType Relationship, Normalisation, Structured Query Language (Data Definition Language, Data Manipulative Language and Data

Control Language), Data Warehouse, Data Mining.

MGMT 3710 Risk Management and Business Intelligence

This course presents basic concepts and techniques for risk management and business intelligence using state-of-the-art commercial software. Various types of risk such as, market risk, credit risk and operational risk are discussed with business applications and regulatory issues. Particular focus is on how to quantify risk using statistical methods and how different types of risk interact. Modern development of business intelligence, data management techniques and related applications like, financial analysis, risk assessment, customer relationship management and human capital productivity analysis are also presented. Particular attention is on how to transform data to valuable resources to enterprise. Students are expected to gain hand-on experience in risk management and business intelligence via real data analysis and business cases.

MGMT 3703 Corporate Operational Risk Management

What is operational risk?, Relationship to other risk classes ,The role of the Board, The role of the Audit Committee, The role of non-executive directors, the responsibilities of the operational risk management function, Matrix management , The relationship to the internal audit and legal functions, what is risk appetite or risk tolerance, how is it calculated and how is it distributed within a business?, Development of an Operational Risk Framework , Development of operational risk policies, Development of an operational risk framework ,The importance of flowcharting procedures , Business process modelling ,Identification of key controls, What is a key risk indicator? , How to design key risk or performance indicators?, How many indicators are suitable? , Relationship to quality modelling systems, Reporting of indicators and the balanced scorecard

ECON 3601 International Business Environment

Global business environment, the Global Manager, Globalisation, Culture in Business, Politics and Law in Business Economic systems and Development, International Trade and Finance, Business-Government trade relations, Foreign Direct Investment, Regional Economic Integration, Planning and organising international operations, Analysing international Opportunities, Hiring and Managing employees; international Staffing Policy

LEVEL 3, SEMESTER 2

QUAN 3304 Financial Engineering

Pure Derivatives: Forwards and Futures Contracts, Principles of Swaps, Returns Swaps, Default Swaps, Options: Robust No-Arbitrage Relations, Curvature Restrictions and State-Price Densities, Introduction to Dynamic Arbitrage, Binomial Model: Implementation and Extensions, Options in Compensation Contracts, The Black-Scholes-Merton Model, Hedging with Options, Extending the Black-Scholes Formula, Application of Option-to-Exchange, Structural Models of Credit Risk, Application of Structural Models, Single Name Credit Derivatives, Financial Engineering and the Subprime Crisis. How derivatives are used to manage corporate financial risks, specifically the control of equity, interest rate, and commodity price exposures. The applications are drawn from a variety of different industries and the instruments studied are both domestic and global in nature.

ACCF3228 Financial Economics

Financial Markets and the Economy : Real Assets versus Financial Assets ; The Role of Financial Assets in the Economy ; Users of the Financial System; Role of the financial system: An illustration, Making choices in risky situations: Utility theory given uncertainty; Axioms of choice under uncertainty ; Establishing a definition of risk aversion, Financial Instruments :Types of Financial Instruments ; Characteristics of Financial Instruments ;Financial Innovation , Basic Tools for Portfolio Analysis, Mean Variance Analysis, The Capital Asset Pricing Model (CAPM),

Factor Models and Arbitrage Pricing Theory (APT), Empirical Evidence on Asset Pricing Theories and Market Efficiency, Fixed-Income Securities, The Management of Bond Portfolios, Capital Budgeting Under Uncertainty, Risk Sharing and Incentive Contracts, Capital Structure and the Cost of Capital, Asymmetric Information in Financial Markets

MGMT 3711 Advanced Data Mining for Risk Management and Business Intelligence

This module will explore some advanced principles and techniques of data mining, with emphasis on applications in risk management and business intelligence. Topics include data mining process for data transformation and integration, data pre-processing, data mining algorithms and evaluation of data mining models and results. Advanced topics include data stream analysis, using data warehouse for decision support, supervised, semi-supervised and unsupervised learning techniques in data mining. The module will cover advanced data mining applications in credit risk analysis, scale up methods for mining massive customer data and various novel applications such as data mining applications in social network analysis. Projects are aimed at familiarize the students with the entire data mining process rather than isolated applications.

MGMT 3302: Strategic Business Planning and Management

Objectives and Corporate Governance; Aims and Objectives of an Organisation and its Impact on Business Planning; Environmental Issues and their Impact in Corporate Governance; Strategy Formulation; Strategic Planning Process and its link with Investment Decisions; Risk Analysis; Investment Decisions; Decision Making Techniques; Expansion Strategies; Corporate Reorganisation; Treasury Management and Financial Forecasting; Global Economic Environment; Global Financial Management; Ethical Considerations.

DISS 3000: Dissertation

The dissertation will be of 10,000- 12,000 words and should be related to the field of Risk Management.