Overview

Offered by the Mona School of Business in conjunction with the Department of Mathematics, Faculty of Science & Technology, The University of the West Indies. The MSc. ERM degree programme is designed to address the demand in the financial services and other industries for modern risk management skills. Risk professionals require a set of integrated skills in risk modelling and management of the risks associated with assets/liabilities of their business operations. The programme is designed to produce graduates with skills in risk techniques and practices who also understand the business contexts and thus are able to address complex risk issues. The programme will attract professionals seeking breadth in risk management. They will typically have backgrounds in a wide cross-section of industries such as the financial services (especially banking, insurance), consultancy, the non-financial sector as well as from the public sector. This is an important added value, which prepares the student for team work with members of diverse backgrounds.

The suite of courses will produce a cadre of unique, employable individuals, responsive to the contemporary risk management challenges facing enterprises in the world and in particular, the Caribbean Region.

The main aims of the **MSc-ERM** are to:

- Introduce the basic concepts and techniques of quantitative risk management across an enterprise, as well as the business context in which such risk management takes place.
- Provide a good grounding in risk management best practices.
- Identify and measure risks; to take actions to mitigate risks and exploit opportunities.
- Apply quantitative as well as qualitative approaches to risk management.
- Familiarise students with computational techniques and risk management software.

Admission Criteria

Minimum GPA of 3.0 in a Bachelor's degree (or equivalent from an overseas institution) in a quantitative discipline.

Preference will be given to those applicants with 3 years relevant work experience.

Duration

24 months part-time (evenings)

Target Groups:

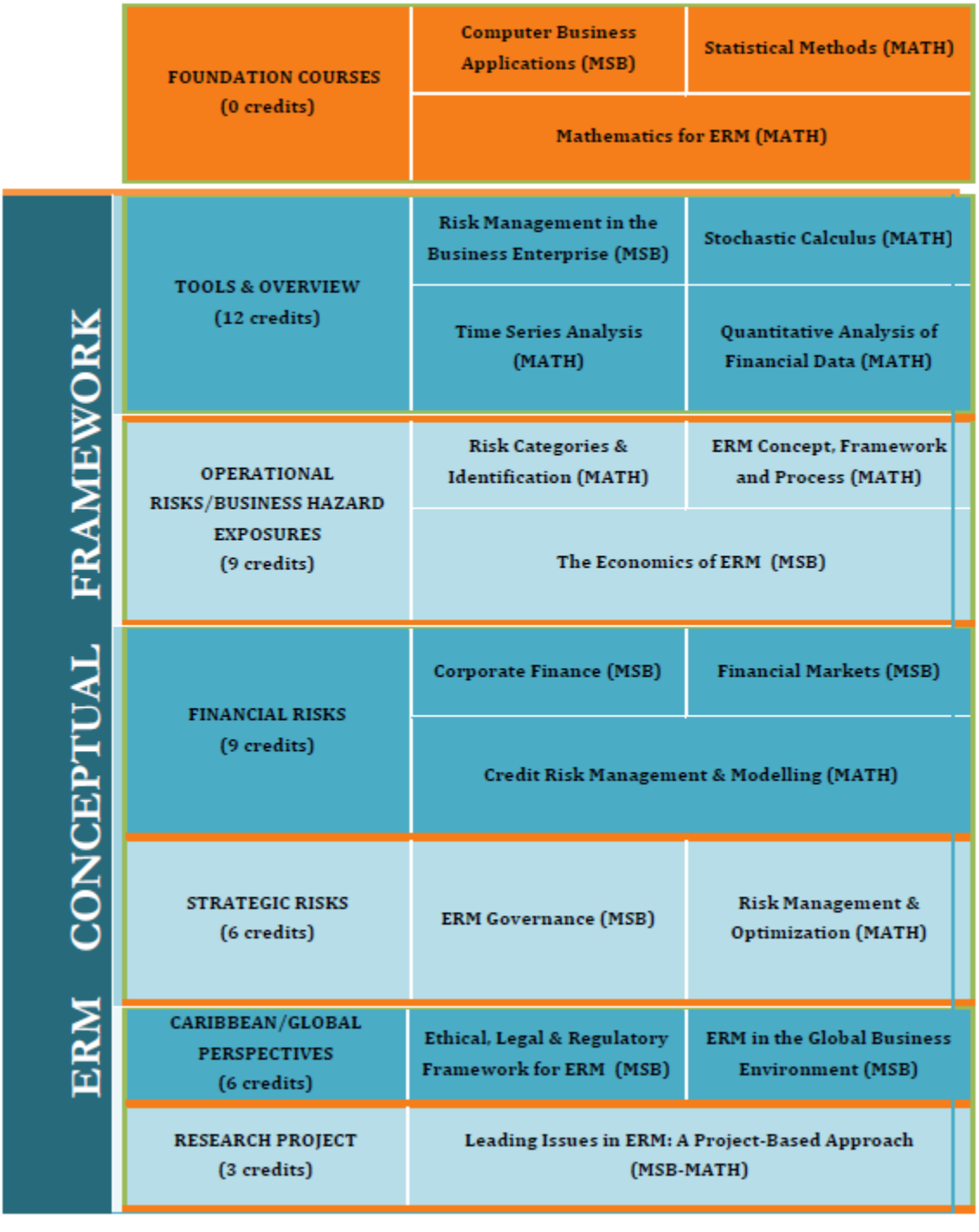
Risk Officers, Financial Officers, Actuaries, Risk Professionals, Risk Modellers, Asset Liability Management Practitioners, Equity Analysts and other Investment Professionals.

Tuition Fee (subject to change):

US$15,200 [full programme cost; includes reading material]

PROGRAMME STRUCTURE

Figure 1: Proposed Matrix for the MSc-ERM Programme - Core Courses



The Programme has three (3) Foundation courses and fourteen (14) Core Courses. A description of each course is provided below:

FOUNDATION COURSES

COURSE TITLE: MATHEMATICS FOR ERM
COURSE CODE: MTRM6001

The course is divided into four sections, namely; Sequence & Series, Calculus, Linear Algebra and Numerical Methods. First, we will look at limits and continuity, Taylor series and sequences. Secondly, we introduce functions of one and several variables, differentiation, integration, partial differentiation, Optimisation, and Lagrange multipliers. Thirdly, we solve a system of equations, eigenspace, and quadratic forms. Finally, we look at methods of solving linear and non-linear equations, cholesky decomposition, constrained and unconstrained numerical optimisation and finite difference methods.

COURSE TITLE: STATISTICAL METHODS
COURSE CODE: MTRM6002

This course will introduces and examine ways of presenting statistical information graphically and descriptively. We then proceeds to ideas of probability, distribution and density along with expectation and variation. Building on this, we look at special type of probability distribution, such as, normal, lognormal, and others. What makes a good estimator? Confidence intervals, hypothesis testing and regression. In addition, the statistical package R will be usedthroughout the course.

COMPUTER BUSINESS APPLICATIONS

The aim of this course is to enhance and improve the basic knowledge and use of personal productivity software, generally available in software office suites, which include spreadsheet, word processing, and presentation software.

CORE COURSES

COURSE TITLE: RISK CATEGORIZATION & IDENTIFICATION
COURSE CODE: **MTRM6010**

This course will expose students to key methodologies to successfully define, identify and develop risk categorization. The course seeks to provide a thorough grounding in the identification and assessment of a wide range of risks across industries that single, group, conglomerate, multi-domestic, international, multinational, transnational firms may be

exposed to in order to facilitate accurate and timely decision making in terms of actions necessary to encounter (or exploit) the risks.

COURSE TITLE: TIME SERIES ANALYSIS
COURSE CODE: **MTRM6020**

Time series analysis is a specialised branch of statistical science which deals with such data sets, providing an essential toolset for finance and business analysis, economic forecasting, and decision-making.

The course covers the fundamental concepts required for the description, modeling and forecasting of time series data. A particular emphasis is placed on the analysis of real-world data sets from finance and economics, and a practical laboratory component introduces students to the software package R (or other software).

COURSE TITLE: STOCHASTIC CALCULUS
COURSE CODE: **MTRM6030**

The course aims at providing students with the tools required for a rigorous understanding of financial modelling and pricing techniques and therefore provides the mathematical grounding for financial derivatives.

Stochastic calculus is a branch of mathematics that operates on stochastic processes. The methods of stochastic calculus have turned out to be most suitable for an adequate description of the evolution of basic (bonds and stocks) and derivatives (forwards, futures, options etc) securities. The underlying construction of these financial products shall be explored. Additionally, participants will be shown the uses and benefits of stochastic calculus in financial engineering.

COURSE TITLE: QUANTITATIVE ANALYSIS OF FINANCIAL DATA
COURSE CODE: MTRM6040

This is a course in quantitative risk management and financial econometrics. In this course focus will be on the statistical modelling of financial time series (asset prices and returns) with an emphasis on modelling volatility and correlation for quantitative risk management. This course discusses the various approaches to analyze and model financial data with real and simulated data via the computer package R (or other programming language).

The aims of the course are to introduce state-of-the-art techniques for modelling financial time series and managing financial risk and to use the open source R statistical software (or other software) to provide hands-on experience with real world data.

COURSE TITLE: RISK MANAGEMENT & OPTIMIZATION
COURSE CODE: **MTRM6050**

The increased exposure, complexity and scale of risks faced by enterprises has increased the need for enhanced processes to assess, measure and manage risks. Ineffective risk management may result in financial distress, reputation loss or bankruptcy.

The student will understand the means available for managing various risks and how an entity decides which technique is appropriate.

The course will integrate measurement tools often associated with finance, statistics and economics to explore how risk management techniques may be applied to challenging risk categories (including operational and strategic risk).

COURSE TITLE: CREDIT RISK MANAGEMENT & MODELLING
COURSE CODE: **MTRM6060**

This course is an introduction to credit risk management and to the models for analyzing, predicting and mitigating credit risks. Students will learn the basis for widely used modelling methods for credit risk assessment and implement those methods through programming assignments using R (or other software).

The students will be introduced to quantitative models for measuring and managing credit risks,
Provided with a critical understanding of the credit risk methodology used in the financial industry and given an appreciation of the regulatory framework in which the models operate.

COURSE TITLE: ERM CONCEPT, FRAMEWORK & PROCESS
COURSE CODE: **MTRM6070**

The course aim is to provide students with a good understanding of ERM and the regulatory frameworks who can execute ERM at the strategic level to drive decision making.

They should demonstrate an understanding of the ERM concept, understand the components of an ERM framework, be able to evaluate the appropriateness of a framework in a given situation and understand each step of the ERM process.

COURSE TITLE: RISK MANAGEMENT IN THE BUSINESS ENTERPRISE

COURSE CODE: SBRM6010

The management of risks in business enterprises represents one of the greatest challenges facing business leaders in the world. The awareness of risks, identification of risks and the tools and methodologies of measurement and management of risks facing the enterprise are either non-existent or inconsistently applied in individual enterprises and across business sectors. Each risk type is usually handled in isolation: only the financial risks have commonly received robust quantification.

Operational risk has received attention primarily by companies in particular industries where operational failures are a common hazard. The specialized knowledge and techniques developed for these sectors are incorporated into ERM and can be critically applied across a broader spectrum of industries to mitigate operational risks that are critical impediments to business performance and creation of shareholder value.

COURSE TITLE: CORPORATE FINANCE

COURSE CODE: SBRM6020

The main objective is to provide an understanding of corporate finance concepts and decision making in competitive financial markets from the point of view of risk managers. This course serves as an introduction to corporate finance and financial management for students pursuing the masters in Enterprise Risk Management.

In addition, this course provides a framework, concepts, and tools for analyzing corporate finance problems and issues, based on the fundamental principles of modern financial theory, with an understanding of application to "real-world" situations. The approach is rigorous and analytical. Topics covered include discounted cash flow techniques, cash flow development and analysis, required returns and the cost of capital, corporate capital budgeting, company and security valuation, working capital management, capital structure and company restructuring issues. In all cases an underlying focus will be on the analysis of risk and the tools of risk mitigation from a corporate finance perspective.

COURSE TITLE: FINANCIAL MARKETS

COURSE CODE: SBRM6030

Risk managers must be familiar with the workings of financial markets. They must understand the capabilities provided by the financial sector to mitigate risk. They must also understand the inherent risks facing the financial sector. To do both they must have a good understanding of how financial markets and institutions work.

Well functioning markets are constantly changing, so too with financial markets. It was not long ago that most financial markets were domestic in scope and limited in institutional

variety. Today financial markets are global in nature, with open foreign exchange markets and a growing variety of financial institutions and instruments. These changes have increased the importance of readily available and accurate information and of a well designed regulatory framework. Moreover, with global financial markets being harsh in response to poorly managed economies, national, regional and international economic management has taken on increased importance. This course, therefore, will examine financial markets in terms of the tools it provides to the risk manager as well as looking at the risks, especially those of a systemic nature, that are often created and propagated by financial markets.

COURSE TITLE: ECONOMICS OF ENTERPRISE RISK MANAGEMENT
COURSE CODE: SBRM6040

The Economics of Enterprise Risk Management course provides a broader economic framework and context, whereby risks can be identified and interpreted using economic theory and thought applicable to its interpretation. For example, in a global marketplace, the enterprise must be increasingly conscious about how and when changes in demand and supply of commodities and financial flows in world markets will transmit to their own arena and trigger off a cascade of events that puts the enterprise in jeopardy, if no risk mitigation action is taken. Conversely, opportunities emerging in local and foreign markets may be missed and not included in the enterprise's risk management and strategic plans.

This course equips the student with the requisite tools of economic analysis to effectively recognize, evaluate, measure and manage an array of risks within a comprehensive economic and risk management framework. The Economics of Enterprise Risk management course will be pivotal in informing other coursework relative to fundamental analysis of economic activity affecting the business of the enterprise globally.

COURSE TITLE: ENTERPRISE RISK MANAGEMENT GOVERNANCE
COURSE CODE: SBRM6050

The topical focus of this course is corporate governance and prioritization of Enterprise Risk Management as a critical element of the responsibility of the Board and senior executives. The recent financial crisis created major disruptions in the financial services and other industries globally and has called into question the effectiveness of governance structures in enterprises. It has revealed significant weaknesses in the risk management systems, silo management infrastructures, disparate systems and processes, fragmented decision-making, inadequate forecasting and a lack of cohesive and timely reporting to and action by senior management.

This recognition has forced Boards of Directors to rethink risk strategies and change from a purely oversight role to active participation in defining the enterprise's risk appetite and approving broad risk parameters. Chief Financial officers are also redefining their role to better align financial functions with risk management teams, so that risk governance,

finance and capital allocation decisions reinforce each other rather than work at cross purposes.

COURSE TITLE ETHICAL, LEGAL AND REGULATORY FRAMEWORK FOR ENTERPRISE RISK MANAGEMENT

COURSE CODE: SBRM6060

Businesses operate in a global environment and are increasingly exposed to changes in laws and regulations not only in their home country, but in foreign jurisdictions. In managing enterprise risks, practitioners must be mindful of key legal concepts and their interpretation in different legal systems. Decision-makers must be aware of the necessity of establishing mechanisms for obtaining appropriate local and foreign legal counsel, when engaging in foreign market entry through non-equity or equity modes (Foreign Direct Investments) or in creating strategic Alliances and Networks. Foreign trade transactions also have implied legal risks should there be a disagreement. Firms are exposed to litigation risk arising from liabilities incurred in various transactions with businesses or individuals or from Regulatory Institutions. The latter may result from failure to comply with local or foreign Laws and Regulations.

The Course will look at the legal relationships between firms, the state and the wider society and will examine the legal and regulatory environment that business organizations face in Caribbean societies and globally; and the implications for identification, management and mitigation of legal and regulatory risk.

COURSE TITLE: ERM IN THE GLOBAL BUSINESS ENVIRONMENT

COURSE CODE: SBRM6070

This course aims to provide students with a good understanding of Enterprise Risk Management (ERM) and the regulatory frameworks in order to be able to execute ERM at the strategic level to drive decision making. The student will demonstrate the understanding of the ERM concept, understand the components of an ERM framework, and be able to evaluate the appropriateness of a framework in a given situation and understand each step of ERM process.

COURSE TITLE: ENTERPRISE RISK MANAGEMENT INTEGRATIVE MODULE

(Leading Issues in ERM: A Project-Based Approach)

COURSE CODE: SBRM6080

This primary aim of this course is to help students develop the capability to use the concepts, frameworks and techniques presented in the ERM programme to analyze and integrate the skills and concepts into a practical risk management framework to address enterprise risks confronting a business enterprise and its related Industry. It is also aimed at developing the capability to synthesize technical analysis and risk modeling and present

information in a readily understandable form for utilization by senior management engaged in strategy and policy formulation and managerial decision-making as well as the measurement and management of the full spectrum of enterprise risks.

The module project draws on the mathematical and quantitative underpinnings of the ERM courses coupled with the Business Management discipline and is intended to create a functional skill base pivoting on the following basic objectives. These are to: 1) stimulate cross-functional skill integration; 2) foster an awareness of the kinds of adjustments often necessary when applying theoretical concepts and frameworks to analyze actual business problems; and 3) develop students' capability to draw appropriately qualified inferences from numeric data and other factual information, as well as formulate appropriately tailored recommendations.