

MS6211: STATISTICAL MODELLING IN RISK MANAGEMENT

Effective Term

Semester B 2024/25

Part I Course Overview

Course Title

Statistical Modelling in Risk Management

Subject Code

MS - Decision Analytics and Operations

Course Number

6211

Academic Unit

Decision Analytics and Operations (DAOS)

College/School

College of Business (CB)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This comprehensive risk management course equips students with essential business knowledge and practical skills to navigate the complex landscape of financial risks. The curriculum focuses on developing a deep understanding of risk management principles and their application in real-world scenarios. Students will explore advanced techniques for identifying, assessing, and mitigating various types of risks faced by organizations. A key component of the course is the development of modeling and computing skills, with particular emphasis on creating and evaluating market and credit risk models. Through hands-on exercises and case studies, participants will learn to leverage data-driven approaches to enhance decision-making processes in risk management. By the end of the course, students will be well-prepared to apply their knowledge and skills to effectively manage risks across different business domains, contributing to the overall financial stability and success of organizations in today's dynamic business environment.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate a comprehensive understanding of the fundamental definitions in market, credit, and operational risk;	20		x	
2	Demonstrate the basic concepts and principles related to risk management;	30		x	
3	Apply and analyze appropriate models to measure risk and to provide solutions or recommendations for managing and mitigating risk;	30		x	
4	Demonstrate the construction of risk mitigation strategies and align them with the needs of particular organizations.	20			x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Interactive Lecture	Actively participate in interactive lectures and discussion to develop a comprehensive understanding of the fundamental concepts, analytical techniques, and practical applications of risk management.	1, 2, 3, 4	3

2	Case studies & group discussions	Complete case studies and group projects to reinforce the knowledge on risk management.	2, 3, 4	2
3	Project	Complete selected group projects to engage in practical applications of the knowledge in the lectures to real-world problems.	3, 4	2

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Project	3, 4	30	
2	Assignments	1, 2, 3, 4	30	
3	Tests	1, 2, 3, 4	30	
4	Class Participation	1, 2, 3, 4	10	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to present group projects with good understanding of risk management concepts and methodologies

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Assignments (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Evidence of good understanding of concepts and methodologies

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Tests (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to correctly solve the problems with good understanding of concepts and methodologies

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Class Participation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Evidence of Attending at least 80% of the lectures

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Project (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to present group projects with good understanding of risk management concepts and methodologies

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate

Failure

(F) Not even reaching marginal levels

Assessment Task

Assignments (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Evidence of good understanding of concepts and methodologies

Excellent

(A+, A, A-) High

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Part III Other Information

Keyword Syllabus

1. Introduction

Nature, scope and terminology of risk management topics. The burden of risk. Measurement of risk. Management of risk.

2. The Risk Management Process

Risk classification and evaluation. Methods of handling risk. Selecting risk management techniques. Insurance as a risk management tool.

3. Risk and Insurance

Pooling of losses. Payment of accidental losses. Risk transfer. Indemnification. Requirements of insurable risk. Adverse selection.

4. Credit Risk Management

Introduction to Credit Risk. Scorecard Development Roles. Risk Scorecard Development Planning. Defining project parameters, e.g., good/bad, exclusions, indeterminates.

5. Credit Risk Model and Strategy Management

Development Database Creation. Model Development: creating a scorecard. Scorecard Management Reports. Strategy Development. Post-Implementation.

6. Operational Risk Management

Introduction to Operational Risk. Aims of Operational Risk Management. Key Components of Operational Risk Management. Hedging Strategies.

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

Title	
1	Thomas, L., Edelman, D., and Crook, J., Credit Scoring and Its Applications, SIAM, 2002.