



UNIVERSITY
of
TECHNOLOGY,
MAURITIUS

School of Innovative Technologies and Engineering

Department of Applied Mathematical Sciences

BSc (Hons) Financial Engineering

PROGRAMME DOCUMENT

VERSION 2.0
BFE V2.0
August 2021

University of Technology, Mauritius

La Tour Koenig, Pointe aux Sables 11134, Mauritius

Tel: (230) 207 5250 Fax: (230) 234 1747 Email: site@umail.utm.ac.mu

Website: www.utm.ac.mu

BSc (Hons) Financial Engineering

A. Programme Information

Financial engineering is a multidisciplinary field, based on mathematical finance, statistics and computational techniques. Throughout this programme, students will be equipped with the necessary skills to create and price financial securities and to assess financial risks from a mathematical perspective. Financial engineers have the necessary aptitude to make hedging, investment, portfolio management decisions and may amongst others find employment in banks, investment firms, insurance companies and energy firms. Moreover, students will be required to undergo a work placement at the second level of the programme of study.

B. Programme Aims

This programme has been designed to provide students with the necessary abilities to solve the ever complicated financial instruments and financial strategies approaches, as well as bridging the gap between highly advanced theoretical financial mathematics and current practice. It also provides students, the awareness of broader concepts of quantitative finance and computational finance.

C. Programme Objectives

Upon successful completion of the programme, students should be able to

- understand, develop and implement mathematical models and computational techniques for pricing of financial and risky assets;
- assimilate a sound understanding of the types of risks associated with these models;
- efficiently put in practice the computational tools developed in mathematical finance to solve real world problems;
- create financial securities for local and international markets;
- acquire necessary skills to implement computational methods for solving various financial problems.

PART I - Regulations

D. General Entry Requirements

As per UTM'S Admission Regulations.

E. Programme Entry Requirements

'A' Level in Mathematics

F. Programme Mode and Duration

Full Time: Minimum 3 Years, Maximum 6 Years (Minimum 6 Semesters, Maximum 12 Semesters)

Part Time: Minimum 4.5 Years, Maximum 7.5 Years (Minimum 9 Semesters, Maximum 15 Semesters)

G. Teaching and Learning Strategies

- Lectures (L), Tutorials (T), Practical (P) Sessions and Self-Development (SD) Activities
- Class Tests, Assignments and Dissertation/Projects;
- Self-Learning, Self-Study, Guest Lecture, Structured Discussions and Self-Directed Study;
- Workshops and Seminars;
- Case Study of real-world problems;
- Work Placement.

H. Student Support and Guidance

Each cohort of the programme is allocated a Programme Coordinator who acts as a liaison between the students and school management and provides support for academic management of the programme.

I. Attendance Requirements

As per UTM's Regulations and Policy.

J. Credit System

This programme is aligned with the European Credit and Transfer System (ECTS).

Six-credit modules consist of 45 hours of delivery and 105 hours of self-learning, self-study, guest lecture, etc. The delivery could be any combination of face-to-face, blended, online, seminar, workshop or joint session.

For the award of

- a Certificate, a minimum of 60 credits are required;
- a Diploma, a minimum of 120 credits are required;
- an Honours Degree, 180 credits are required.

K. Student Progress and Assessment

The programme is delivered mainly through lectures, tutorials, and practical laboratory sessions. Students are expected to be as autonomous and research oriented as possible in their self-study and self-development activities, which may include reading, writing reports, delivering presentations, taking part in quizzes, and case-studying, amongst others. Each module carries 100 marks and unless otherwise specified, will be assessed as follows:

- written and/or practical examination, and coursework carrying 30% - 40% of total marks;
- coursework must consist of at least one class test and may also include assignments, field study, workshops and practical tests;
- modules 'Computer Programming I' and 'Life Skills and Good Practices' will be assessed by 100% coursework. The coursework must consist of at least one class test and at least one assignment.

Module grading structure:

Grade	Marks x (%)	Remarks
A	$70 \leq x \leq 100$	Excellent
B	$60 \leq x < 70$	Very Good
C	$50 \leq x < 60$	Good
D	$40 \leq x < 50$	Satisfactory
F	$x < 40$	Referred

L. Evaluation of Performance

The % mark at Level 1 contributes a 20% weighting towards the degree classification.
The % mark at Level 2 contributes a 30% weighting towards the degree classification.
The % mark at Level 3 contributes a 50% weighting towards the degree classification.

M. Award Classification

Overall weighted mark y (%)	Classification
$70 \leq y \leq 100$	First Class with Honours
$60 \leq y < 70$	Second Class First Division with Honours
$50 \leq y < 60$	Second Class Second Division with Honours
$45 \leq y < 50$	Third Class with Honours
$40 \leq y < 45$	Pass
$y < 40$	No Award

N. Programme Organisation and Management

Programme Director: Dr Arshad Ahmud Iqbal PEER

Contact Details:

- Telephone Number: (230) 207 5250
- Email: apeer@umail.utm.ac.mu

PART II - Programme Structure

O. BSc (Hons) Financial Engineering – Full Time (Version 2.0)

YEAR 1 (Level 1)							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
MATH 1305C	Calculus Fundamentals	3+7	6	MATH 1306C	Matrices and Multivariable Calculus	3+7	6
ECON 1103C	Principles of Microeconomics	3+7	6	ECON 1102C	Macroeconomics	3+7	6
STAT 1202C	Statistics Essentials	3+7	6	STAT 1203C	Statistical Models	3+7	6
QFIN 1102C	Financial Concepts	3+7	6	QFIN 1213C	Mathematics of Finance	3+7	6
COMP 1101C	Computer Programming I	3+7	6	ACCF 1101C	Accounting	3+7	6

YEAR 2 (Level 2)							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
MATH 2302C	Differential Equations	3+7	6	STAT 2304C	Time Series Models	3+7	6
QFIN 2105C	Derivatives and Financial Markets	3+7	6	QFIN 2104C	Investment Instruments and Analysis	3+7	6
STAT 2204C	Applied Probability Models	3+7	6	QFIN 2103C	Bonds and Derivatives	3+7	6
QFIN 2109C	Corporate and Legal Finance	3+7	6	UTM 2101	Life Skills and Good Practices	3+7	6
MATH 2325C	Numerical Analysis	3+7	6				
PROJ 2119C	Work Placement (During Semester Break)						6

YEAR 3 (Level 3)							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
MATH 2307C	Mathematical Programming and Optimisation	3+7	6	QFIN 3106C	Credit Product and Credit Risk	3+7	6
STAT 2306C	Multivariate Analysis	3+7	6	QFIN 3107C	Portfolio Management	3+7	6
QFIN 3203C	Financial Risk Forecasting	3+7	6	QFIN 3205C	Discrete Financial Modelling	3+7	6
QFIN 3204C	Valuation of Financial Derivatives	3+7	6	STAT 3307C	Actuarial Regression Models	3+7	6
PROJ 3110C	Project						12

P. BSc (Hons) FINANCIAL ENGINEERING – Part Time (Version 2.0)

YEAR 1							
→ Start of Level 1							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
MATH 1305C	Calculus Fundamentals	3+7	6	COMP 1101C	Computer Programming I	3+7	6
ECON 1103C	Principles of Microeconomics	3+7	6	MATH 1306C	Matrices and Multivariable Calculus	3+7	6
STAT 1202C	Statistics Essentials	3+7	6	ECON 1102C	Macroeconomics	3+7	6
QFIN 1102C	Financial Concepts	3+7	6				

YEAR 2							
				→ Start of Level 2			
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
STAT 1203C	Statistical Models	3+7	6	MATH 2302C	Differential Equations	3+7	6
QFIN 1213C	Mathematics of Finance	3+7	6	QFIN 2105C	Derivatives and Financial Markets	3+7	6
ACCF 1101C	Accounting	3+7	6	STAT 2204C	Applied Probability Models	3+7	6
End of Level 1 →							

YEAR 3							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
QFIN 2109C	Corporate and Legal Finance	3+7	6	QFIN 2104C	Investment Instruments and Analysis	3+7	6
MATH 2325C	Numerical Analysis	3+7	6	QFIN 2103C	Bonds and Derivatives	3+7	6
STAT 2304C	Time Series Models	3+7	6	UTM 2101	Life Skills and Good Practices	3+7	6
PROJ 2119C	Work Placement (During Semester Break)						6
				End of Level 2 →			

YEAR 4							
→ Start of Level 3							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	Credits	Code	Modules	Hrs/Wk L/T/P+SD	Credits
MATH 2307C	Mathematical Programming and Optimisation	3+7	6	QFIN 3106C	Credit Product and Credit Risk	3+7	6
STAT 2306C	Multivariate Analysis	3+7	6	QFIN 3107C	Portfolio Management	3+7	6
QFIN 3203C	Financial Risk Forecasting	3+7	6	PROJ 3110C	Project	-	-
QFIN 3204C	Valuation of Financial Derivatives	3+7	6				

YEAR 5			
Semester 1			
Code	Modules	Hrs/Wk L/T/P+SD	Credits
QFIN 3205C	Discrete Financial Modelling	3+7	6
STAT 3307C	Actuarial Regression Models	3+7	6
PROJ 3110C	Project	-	12
			End of Level 3 →