



UNIVERSITY
of
TECHNOLOGY,
MAURITIUS

School of Innovative Technologies and Engineering

Department of Applied Mathematical Sciences

MSc Applied Statistics
with
Operational Research

PROGRAMME DOCUMENT

VERSION 2.0

MASOR v 2.0

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University of Technology, Mauritius

La Tour Koenig, Pointe aux Sables 11134, Mauritius

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A. Programme Information

In this data deluge era, decision making and planning processes in almost all major institutions are increasingly becoming data dependent. Statistics provides the reasoning and techniques for producing and understanding data. This Master degree programme aims to bridge the gap between University and Industry by considering statistical and mathematical models relevant to the industry. The programme is designed as an intensive two-semester (full-time mode) or three-semester (part-time mode) course which focuses on training in statistics, predictive modelling and analysis with complex datasets for problems in forecasting and the understanding of the problem-solving process required when supporting management decision-making. The focus on operational research will further equip students with the necessary analytical abilities involved in efficient decision-making processes.

B. Programme Aims

The MSc Applied Statistics with Operational Research course is designed to train students who wish to pursue career in the field of or as:

- Statisticians
- Academia
- Data collection research and analysis
- Modelling and forecasting of time dependent phenomena
- Operations research analysts
- Marketing and quality improvement
- Population research and surveys / social science statistics
- Statistics/OR practitioners (health, manufacturing, transport)

The degree programme also serves as an excellent basis for students wishing to pursue studies for an MPhil/PhD, hence leading to careers as researchers in the field of statistics or modelling and forecasting.

C. Programme Objectives

Upon successful completion of the programme, students will be expected to

- be able to manipulate, analyse and interpret real-world data;
- demonstrate a sound understanding on the advanced techniques employed to analyse complex organisational problems and help make better decisions;
- possess problem solving techniques strongly transferable for immediate use within industry;
- be able to deliver their competencies in the statistical models, relevant to the industry and hence become confident statistical analysts;
- be fluent with the main computational techniques used in applied statistics and operational research.

PART I - Regulations

D. General Entry Requirements

As per UTM's Admission Regulations.

E. Programme Entry Requirements

A recognised Bachelor Degree with significant content of Mathematics or Statistics.

For instance, a recognised bachelor degree in Statistics, Mathematics, Engineering, Business, Actuarial Science, Finance, A closely related field, or other qualifications (academic or professional) acceptable to the University of Technology, Mauritius can be considered.

F. Programme Mode and Duration

Full Time: Minimum 1 Year, Maximum 3 Years (Minimum 2 Semesters, Maximum 6 Semesters)

Part Time: Minimum 1.5 Years, Maximum 3.5 Years (Minimum 3 Semesters, Maximum 7 Semesters)

G. Teaching and Learning Strategies

- Lectures, Tutorials, Practical Laboratory Sessions and Self-Development Activities;
- Class Tests, Assignments and Dissertation;
- Structured Discussions and Self-Directed Study;
- Workshops and Seminars;
- Case Study of real-world problems.

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).

One module will carry 150 hours of learning comprising of 45 hours of delivery which could be any combination of face to face, blended, online, seminar, workshop or joint session. The remaining 105 hours will cover self-learning, self-study, guest lecture etc.

1 module = 6 credits

Master's Dissertation = 18 credits

Minimum Credits Required for Award of:

Master's Degree: 90

Postgraduate Diploma: 60

Postgraduate Certificate: 30

K. Student Progress and Assessment

The programme is delivered mainly through lectures (L), tutorials (T), and practical (P) laboratory sessions. Students are expected to be as autonomous as possible in their self-study and self-development (SD) activities 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 a continuous assessment component carrying 30% - 40% of total marks;
- continuous assessment must consist of at least one class test and may also include assignments, field study, workshops and practical tests

L. Evaluation of Performance

The percentage mark contributes a 100% weighting towards the degree classification.

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
A – D	Pass	
F	Fail	

M. Award Classification

Overall weighted mark x (%)	Classification
$70 \leq x$	MSc with Distinction
$60 \leq x < 70$	MSc with Merit
$40 \leq x < 60$	MSc
$x < 40$	No Award

N. Programme Organisation and Management

Programme Director: Dr Aslam Aly El-Faidal SAIB.

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Part II - Programme Structure

O. MSc Applied Statistics with Operational Research– Full Time (Version 2.0)

Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P + SD	Credits	Code	Modules	Hrs/Wk L/T/P + SD	Credits
STAT 5320C	<i>Fundamentals of Applied Statistics</i>	3 + 7	6	STAT 5323C	<i>Time Series Econometrics</i>	3 + 7	6
MATH 5321C	<i>Methods for Operational Research</i>	3 + 7	6	MATH 5314C	<i>Advanced Operational Research Methods</i>	3 + 7	6
STAT 5322C	<i>Credit Scores and Data Mining</i>	3 + 7	6	STAT 5318C	<i>Multivariate Data Analysis</i>	3 + 7	6
COMP 5106C	<i>Simulation Techniques</i>	3 + 7	6	COMP 5117C	<i>Optimization Methods for Matrices</i>	3 + 7	6
COMP 5116C	<i>Computational Methods in Statistics</i>	3 + 7	6	STAT 5346C	<i>Stochastic Models and Forecasting</i>	3 + 7	6
STAT 5348C	<i>Essential of Big Data</i>	3 + 7	6	STAT 5349C	<i>Machine Learning Techniques</i>	3 + 7	6
PROJ 5201C	<i>Master's Dissertation</i>						18

P. MSc Applied Statistics with Operational Research – Part Time (Version 2.0)

Semester 1			
Code	Modules	Hrs/Wk L/T/P + SD	Credits
STAT 5320C	<i>Fundamentals of Applied Statistics</i>	3 + 7	6
MATH 5321C	<i>Methods for Operational Research</i>	3 + 7	6
STAT 5322C	<i>Credit Scores and Data Mining</i>	3 + 7	6
COMP 5116C	<i>Computational Methods in Statistics</i>	3 + 7	6

Semester 2				Semester 3			
Code	Modules	Hrs/Wk L/T/P + SD	Credits	Code	Modules	Hrs/Wk L/T/P + SD	Credits
COMP 5106C	<i>Simulation Techniques</i>	3 + 7	6	STAT 5318C	<i>Multivariate Data Analysis</i>	3 + 7	6
STAT 5323C	<i>Time Series Econometrics</i>	3 + 7	6	MATH 5314C	<i>Advanced Operational Research Methods</i>	3 + 7	6
COMP 5117C	<i>Optimization Methods for Matrices</i>	3 + 7	6	STAT 5346C	<i>Stochastic Models and Forecasting</i>	3 + 7	6
STAT 5348C	<i>Essential of Big Data</i>	3 + 7	6	STAT 5349C	<i>Machine Learning Techniques</i>	3 + 7	6
PROJ 5201C	<i>Master's Dissertation</i>						18