

M.Sc. in Operational Research

Department of Mathematics

Faculty of Engineering

University of Moratuwa

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1. Introduction to the degree program

Operational Research is the application of the scientific methods to solve problems arising from operations in involving integrated systems of machines materials. It normally utilizes the knowledge and skill of an interdisciplinary research team to provide the managers of such systems with optimum operating solutions whereas statistics is branch of mathematics dealing with the collection, analysis, interpretation, and presentation of numerical data.

Statistical data analysis and mathematical optimization models has become vital component of the complex global business environment along with information technology and analytical tools. MSc in Operational research basically encompass four major integrated subject areas including Operational research, Statistics, Management science and information Technology.

Degree program focus on Applications of statistics and operational research techniques in various fields of developing your competence in the three stage process, transforming real world problems in to Quantitative models (formulation), solve the models by applying statistics and operational research techniques (analysis) with the help of software and IT applications. Ultimately conclude the optimal corporate decision with the help of corporate knowledge (Interpretation).

The program consists of two components; Coursework and Research, Those who successfully complete the examinations, assignments and seminars will be eligible for the award of a Postgraduate Diploma, if necessary criteria are met.

Those who wish to obtain the M.Sc. in Operational Research whilst meeting the necessary criteria should start the research under the guidance of expert staff in the relevant area.

2. Significant of the degree program

- A unique master's degree program in Sri Lanka in the area of Operational Research
- Degree is offered by Department of Mathematics, Faculty of Engineering, University of Moratuwa, Leading technical university in Sri Lanka convey world class recognition to it graduate.

- Degree program is design from fundamental theories to complex real world applications thus any candidate who fulfil the minimum requirement of eligibility could successfully complete the program irrespective of prior knowledge on statistics and operational research with passion and dedication.
- Graduates are trained to identify within which theoretical concepts and techniques to be apply base on the nature of the practical situation hence develop more practical and visionary professional which are more suit for current industry requirement.
- Highly focus on real world application with necessary theoretical concept.
- Flexible assessment criteria and evenly distributed course work load which enable the graduate balancing their academic and professional works.
- Managerial skill development through group discussion, presentation and Assignment reports.

3. Course Structure

The medium of instruction is English. The course consists of two components; Coursework component containing 11 compulsory modules, 1 Elective module and mini project (3 Semesters, 24 weeks per each) and individual research component (min 24 weeks - max 2 year with one year extension). The coursework component consists of lectures, seminars, practical, case studies, group-projects, group discussions, presentations, continuous assessments and examinations at the end of each of the three semesters. The course emphasizes practical work involving real data analysis with the help of sophisticated analytical tools which would give the students a measure of confidence in real life problem handling. Proceeding to the final semester is purely based on the performance of the coursework component. Those who proceed to the M.Sc. in Operational Research are required to submit a dissertation for the M.Sc in Operational research and will be evaluated and further examined through a progressive and final viva defense.

3.1. Course Modules

Module Code	Module Name	Course Credits	Evaluation	
			Assignment	Final Exam
Compulsory Modules				
MA 5610	Basic Statistics	3	40±10	60±10
MA 5620	Operational Research Techniques I	4	40±10	60±10
MA 5640	Principles of Management	3	40±10	60±10
MA 5650	Computer Programming for Operational Research	3	40±10	60±10
MA 5630	Regression Analysis	3	40±10	60±10
MA 5660	Operational Research Techniques II	4	40±10	60±10
MA 5690	Production and Operation Management	3	40±10	60±10
MA 5680	Time Series Analysis	4	40±10	60±10
MA 5700	Parametric and Non Parametric Statistics	3	40±10	60±10
MA 5670	Multivariate Statistics for Data Mining	4	40±10	60±10
MA 5710	Financial Management	2	40±10	60±10
Elective Modules				
MA 5740	Survey Sampling and Estimating	2	40±10	60±10
MA 5730	Numerical Methods	3	40±10	60±10
MA 5720	Principles of Marketing	3	40±10	60±10

Assessment criteria for mini project - 30% for report writing
70% for problem solving

Assessment criteria for Research Project - 20% for presentation (proposal/progressive/final)

10% Report writing

70% project content and analysis

Credit requirement for PG Diploma - 44 Credits

Credit requirement for Master's Degree - 64 Credits

4. Course Duration

Duration in Weeks		PG Diploma	Masters in Science
Term 01	Course work + Seminars	20	20
	Examinations	4	4
Term 02	Course work + Seminars	24	24
	Examinations	4	4
Term 03	Course work + Seminars	26	26
	Examinations	4	4
Mini Project	Report Submission	-	-
Research Project*	Dissertation + Viva	Not Required	26
Total time Duration		82	108

*Research project is awarded 2 year extension if necessary

4.1. Course schedule and facilities

- All the Academic activities will be conducted only on Saturday.
- During the pandemic season online lectures will be conducted via zoom.
- Lecture hours at Department of Mathematics Faculty of Engineering, University of Moratuwa. Morning session: 08:30 – 12:30, Afternoon session: 13.:00 – 17:00.
- Assignment and report submissions are open during the whole week [08:30 – 16:30]
- Library facilities open for whole week [08:30 – 22:00]
- Government Holidays are not considered in the Academic calendar unless otherwise specified by course coordinator.

5. Entry Requirements

An Honours Bachelor's degree from the University of Moratuwa,

or

Any other four-year degree in a relevant field [Mathematics, Management, Engineering, Science, Economics, IT or Statistics] from a recognized university as may be approved by the Senate,

or

Any other three year degree in a relevant field from a recognized university, and a minimum period of one year of appropriate experience after obtaining such degree as may be approved by the Senate,

or

Any recognized category of membership of a recognized professional institute Obtained through academic route and with a minimum of one year of recognized appropriate experience after obtaining such a membership as may be approved by The Senate.

- All potential applications are subjected to an interview to ascertain the level of qualification offered and the experience gained in an industrial background. Requirements may be relaxed for applicants holding a qualification or industrial experience of equivalent standard.

6. Course Fee

Payment can be made by three instalments, first instalment at the commencement, second and third instalments at the end of first and second terms respectively.

Application processing fee (non-refundable)	Rs. 1,000.00
Registration Fees	Rs. 1,000.00
Library Fees (refundable)	Rs. 2,500.00
Library Fees (non-refundable)	Rs. 2,000.00
Examination Fees	Rs. 1,000.00
First installment	Rs. 100,000.00
Second installment	Rs. 100,000.00
Third installment	Rs. 100,000.00
Total	Rs. 307,500.00

- All the transactions to be made with the Bank of Ceylon A/C No: 70993353 (BOC Katubedda) in favor of the University of Moratuwa.

7. Target Professional / Industry

Industrial Engineers / Production Engineers / Planning Engineers

Operation Managers / Production Managers / Quality Managers

Logisticians / Management Analysts / Supply Chain Managers

Market Research Analytics / Business Analytics

Data Scientists / Social Scientist

Mathematicians / Statisticians

Software Developers

Researchers

Academics

8. Lecture Panel

Highly qualified academic and expertise industry professionals is conducting the lectures and seminars while maintaining world class assessment standards.

Dr. P.M. Edirisinghe	Senior Lecturer, Dept. of Mathematics, University of Moratuwa
Mr. R.A. Dissanayake	Senior Lecturer, Dept. of Mathematics, University of Moratuwa
Mrs. D.R.T. Jayasundara	Senior Lecturer, Dept. of Mathematics, University of Moratuwa
Dr. J.A.B.U. Jayasinghe	Senior Lecturer, Dept. of Mathematics, University of Moratuwa
Dr. Mrs. V.P.T. Jayawardene	Senior Lecturer, Dept. of Industrial Management, University of Moratuwa
Dr. P.D. Talagala	Senior Lecturer, Dept. of Computational Mathematics, University of Moratuwa
Dr. Buddhika Karunarathne	Senior Lecturer, Dept. of Computer Science & Engineering, University of Moratuwa
Dr. Venura Welagedara	Senior Lecturer, Dept. of Industrial Management, University of Moratuwa
Dr. W.A.R. De Mel	Senior Lecturer, Department of Mathematics, University of Ruhuna
Mr. A.C.M. Naeem	Director, Kingslake Engineering Systems (Pvt) Ltd. Colombo
Mr. Wimal Nanayakkara	Senior Visiting Fellow Institute of Policy Studies, Colombo 07

9. Contact Details

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