



## MASTER OF SCIENCE IN MATHEMATICS

The Master of Science in Mathematics program prepares students for research and teaching senior level mathematics courses at the undergraduate level, and for doctoral studies. It aims to develop future mathematicians for the academe, for government service, and for industry.

### PROGRAM REQUIREMENTS

Basic Courses	9 units
Major Courses	18 units
Elective Courses	3 units
Thesis	6 units
Total	36 units

### BASIC COURSES

#### Graduate Seminar in Mathematics (MTH853M)

3 units

A study of the fundamentals of research, preparation of a thesis proposal, thesis writing procedure, mathematical topics for research, and a selection of topics on pure and applied mathematics.

#### Number Theory (MTH621M)

3 units

A course on the divisibility properties of integers, congruences, diophantine equations, quadratic reciprocity, arithmetic functions, and algebraic numbers.

#### Set Theory and Logic (MTH601M)

3 units

This course demonstrates the development of mathematical thought through basic logical structures and the concepts of classes and sets, functions, relations, partially ordered classes, axiom of choice, and transfinite numbers.

### MAJOR COURSES

#### Advanced Linear Algebra 1 (MTH613M)

3 units

A course on matrices, vector spaces, linear transformations, eigenvalues, linear functionals, bilinear forms, and quadratic forms.

#### Abstract Algebra 1 (MTH611M)

3 units

The study of groups, group homomorphisms, Cayley's theorem, Lagrange theorem, permutation groups, and Sylow theorems.

#### Modern Complex Analysis 1 (MTH643M)

3 units

A course on complex numbers and the complex plane, analytic functions, Cauchy-Riemann equations, infinite series, complex integration, singularities, improper integrals, Cauchy integral theory, singularities, and residue theory.



**Real Analysis 1 (MTH641M)**

*3 units*





### **Partial Differential Equations (MTH867M)**

*3 units*

An introduction to the theory of solving partial differential equations, existence/uniqueness of solutions.

### **Permutation Groups (MTH615M)**

*3 units*

A study of primitive groups, transitive groups, blocks constituents  $k$ -transitivity, and regular groups  $k$ -primitive.

### **Real Analysis 2 (MTH741M)**

*3 units*

A study of the generalized measure and integration, and topological vector spaces.

### **Regression Analysis (MTH691M)**

*3 units*

A study of simple random sampling, stratified random sampling, systematic and cluster sampling, ratio estimates and cost minimization.

### **Selected Topics (MTH855M)**

*3 units*

A study of selected topics in specialized areas of mathematics to be chosen by the professor.

### **Stochastic Processes (MTH609M)**

*3 units*

A course on poisson process, Markov chains, continuous time Markov chains, renewal theory, and martingales.

### **Time Series (MTH697M)**

*3 units*

A course on linear extrapolation, exponential smoothing, filtering, spectral and cross-spectral analysis, ARMA, and ARIMA processes.

## **RESEARCH COURSE**

### **Directed Research (MTH871M)**

*0 unit*

A research course for students who have finished the course work but have not taken or passed the comprehensive examination.

## **THESIS**

### **Thesis 1 TO 9 (MTH876M to MTH884M)**

*6 units*

Conduct of an independent research under the supervision of a thesis mentor. Students who have already passed the comprehensive examination are qualified to enroll in this course.

## **ENTRY QUALIFICATIONS**

- General average of 85%, B, 2.0 or higher.
- For the MS and Straight PhD program: Bachelor's degree in Mathematics or its equivalent.
- Applicants who do not meet the minimum entry qualification for a graduate program may be advised to take preparatory or refresher courses prior to admission to the program.