

# Master of Philosophy (M. Phil.) Program in

## Mathematics



“Promoting Excellence in Education”

### KATHMANDU UNIVERSITY

School of Science  
Department of Natural Science  
Dhulikhel, Kavre  
P.O. Box 6250, Kathmandu  
Phone No.: 00977-11-661 399  
Fax No.: 00977 – 11-661 443  
E-mail: [info@ku.edu.np](mailto:info@ku.edu.np)  
Website: [www.ku.edu.np](http://www.ku.edu.np)

2009

### Introduction

Mathematics is the mirror of civilization. Being an exact science, mathematics seems to be abstract in nature, however today it penetrates all fields of human endeavor. Latest scientific and technological developments have extended the scope of applications of each branch of mathematics. As mathematics is the backbone of any applied sciences, we at Kathmandu University (KU), strive to run advanced degree programs in mathematics maintaining high standards of teaching and research in major branches of mathematics, with a unified approach, emphasizing both the pure and applied aspects. KU envisages to contribute in teaching and research through a healthy & fruitful interaction between the students and teachers.

Realizing the necessity of research-based program in mathematics, KU has prepared an updated course as per the modern trend. The school plans to offer both full time (regular) and part time M. Phil. Programs suitable for fresh graduates and the competent working teachers. At present, KU offers two sorts of M. Phil. Program in mathematics: M. Phil. by course and M. Phil. by Research. M. Phil. by course includes 21 credit hour course works and 9 credit hour dissertation while M. Phil. by research includes 9 credit hour course works and 21 credit hour dissertation. Also, M. Phil. degree has two branches of specialization: Pure mathematics and applied mathematics.

### Objective

The general objective of the program is to create scholars for high profile careers in teaching and research at the local as well as global level. The specific objective is to initiate research in pure as well as in applied mathematics. The course has been designed to meet the following objectives:

- To produce human resource, with depth knowledge and skilled in mathematical tools for teaching, research also to work in business/ financial sectors.

- To focus on both theoretical as well as applied mathematics courses.
- To pay attention toward the latest developments in mathematics
- To contribute in mathematical literature in Nepal and abroad through research and publications.

### General Information

The course structure has been designed to be flexible to meet the needs of students. New courses will be added in the future to cover the latest developments in various areas of mathematics. Semester wise courses structure is as follows:

### Course Structure (For full-time candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	1. Algebra	3
	2. Analysis	3
	3. Topology	3
	4. Use of Computer Software	2
	<b>Total</b>	<b>11</b>
II	5. Functional Analysis & Measure Theory	3
	6. Research Methods	1
	7. Two Elective Courses	3+3
	<b>Total</b>	<b>10</b>
III	Dissertation	9
	<b>Total</b>	<b>30</b>

### Course Structure (For part-time candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	1. Algebra	3
	2. Use of Computer Software	2
II	3. Analysis	3
	4. Topology	3
III	5. Functional Analysis & Measure Theory	3
	6. Research Methods	1
IV	7. Two Elective Courses	3+3
V	Dissertation	9
	<b>Total</b>	<b>30</b>

### Elective Courses\*

- i. Commutative Algebra
- ii. Algebraic Geometry
- iii. Topology & Differential Geometry
- iv. Differential Equations and Its Applications
- v. Applied Functional Analysis
- vi. Special Functions
- vii. Harmonic Analysis
- viii. Number Theory
- ix. Probability and Stochastic Process
- x. Mathematical Modeling
- xi. Operation Research
- xii. Bio-Mathematics
- xiii. Financial Mathematics
- xiv. Qualitative Analysis
- xv. Computational Mathematics
- xvi. Integral Transform

\*Two elective courses will be offered as per the availability of experts.

### Duration of the course

The program is aimed for both full time and part time students. The duration for full time M. Phil. Program will be 18 months (3 semesters) of full time study. The duration for part time M. Phil. Program will be 30 months (5 semesters) of study.

### Dissertation

A dissertation of expository type is a necessary academic requirement for the successful completion of M. Phil. degree. The candidate must indicate an ability to express oneself in a satisfactory style.

Normally, the dissertation should be completed and submitted within six month (for full time course) and at most one year (for part time course), after the successful completion of the assigned courses. However, upon the recommendation of the supervisor, and subject to the approval of the Research Committee, only a maximum extension up to six months can be granted to a student if he/ she desire so.

### Evaluation

In order to graduate, M. Phil. students are to maintain at least a **3.0** CGPA out of a maximum scale of 4.

### Admission Requirement

The minimum requirement for admission to M. Phil. is a good academic record with at least second division with 50% or a CGPA of 2.5 standing out of 4 or an equivalent grade in master's level mathematics (M.A./ M.Sc.). The university reserves the right to accept or deny admission on the basis of overall academic and other records and to limit enrollment by selecting from among qualified candidates.

The expected (minimum) number of students for enrollment in full time or part time M. Phil. Program is **FIVE**. In case of less number of candidates, the school has the right to decide whether or not to run the program. Program will be run at the School of Science, Kathmandu University, Dhulikhel, Kavre.

### Teaching Methodology

Teaching is done by means of lectures, problem solving and discussion. Regular seminars (oral presentation), paper work assignments are the common teaching methods used by the concerned course instructor to achieve the objective of the program. KU professors are always dedicated to academic excellence and committed to academic freedom. The degree is awarded on the basis of the following three components:

1. continuous in-semester evaluation including assignments, seminars and written tests,
2. written examination at the end of each semester,
3. Dissertation work.

At least one publication in a national or an international journal of related discipline is a necessary requirement for the successful completion of M. Phil. degree in case of M. Phil. by research.

The school will encourage students to visit (at their own expense) to other research institute, most likely, to India, for literature collection and to interact with research scholars and faculties.

### Fee Structure

The M. Phil. Program is operated under the full-cost recovery basis. The total fee for the entire M. Phil. program in mathematics for full time as well as for part time course is

**NRS 115,000/-** This does not include the cost of books, stationary, food, lodging and bus fare.

The tuition fee will have to be paid in THREE installments (for full time course) and in FIVE installments (for part time course). Monthly fee will be charged extra for the period of extension for the candidates who delay their completion of degree due to their own negligence.

### Teaching Assistantship

Teaching assistantship can be offered to a few deserving candidates of M. Phil. course to meet the fees charged (partial) by the university. The candidate should teach at least 12 – 15 hrs per week and perform other duties as specified by the head of the department. The department, as per its need, has sole authority to decide the number of such assistantships and the amount of financial assistance provided.

### Library and Computer Lab

To facilitate teaching, learning and research activities, the university has a well-equipped central library for students. Also, the School of Science has a separate computer lab with internet facilities for postgraduate students.

All regulations pertaining to regular students of KU will normally be applicable to M. Phil. students.

### Contact Address

The Coordinator  
M. Phil. Program in Mathematics  
School of Science,  
Kathmandu University  
P.O. Box No. 6250,  
Kathmandu, Nepal.  
E-mail: [mphilmaths@ku.edu.np](mailto:mphilmaths@ku.edu.np)