

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), strives to run advanced degree programs in mathematics maintaining high standards of teaching and research in major branches of mathematics and statistics, with a unified approach, emphasizing both the pure and applied aspects. KU envisages to contribute in research and teaching through a healthy & fruitful interaction between the students and teachers.

Realizing the necessity of research-based program in mathematics and statistics, KU has prepared an updated course as per the modern trend. The school plans to offer both Full time and Part time M. Phil. Programs suitable for fresh graduates and the working teachers. At present, the 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 applied mathematics. The course has been designed to meet the following objectives:

- To produce human resource, skilled in mathematical tools for teaching, research and also to work in business/ financial sectors.
- To focus on both theoretical as well as applied mathematics.
- To pay attention towards the latest developments in mathematics.
- To contribute in mathematical literature publication in Nepal and abroad through research and publications.

General Information about the Program

The course structure has been designed to be flexible so as 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 course structure is as follows:

Course Structure (For full-time candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	1. Algebra	3
	2. Real & Complex Analysis	3
	3. Probability & Stochastic Process	3
	4. Use of computer software	1
	5. Seminar	1
	Total	11
II	1. Measure Theory & Functional Analysis	3
	2. Two Electives courses (either from Section A or Section B)	3+3
	3. Seminar	1
	Total	10
III	Dissertation	9
	Total	30

Course Structure (For part-time candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	1. Algebra	3
	2. Real & Complex Analysis	3
II	1. Probability & Stochastic Process	3
	2. Use of computer software	1
	3. Seminar	1
III	1. Measure Theory & Functional Analysis	3
	2. One Electives courses (either from Section A or Section B)	3
IV	1. One Electives courses (either from Section A or Section B)	3
	2. Seminar	1
	Total	21
V	Dissertation	9
	Total	30

Elective Courses:

Section A: Pure Stream

- Algebraic Geometry
- Topology & Differential Geometry
- Numerical Computation
- Commutative Algebra
- ODE & PDE & their Applications
- Nonlinear Functional Analysis (fixed point theory)
- Special Functions
- Algebraic Topology
- Fuzzy Topology
- Harmonic Analysis

Section B: Applied Stream

- Bio-statistics
- Bio-mathematics
- Mathematical Programming & Optimization
- Risk Theory
- Mathematical Modeling
- Applications of Operations Research in Business/ Industry.
- Financial Mathematics

Duration of the Course

The program is aimed for both full time and part time students. The duration for full time M.Phil. will be 18 months (3 semesters) of full time study. The duration for part-time M. Phil. will be of 30 months (5 semesters) of study. Classes can be held either in the morning or in the afternoon and also on holidays.

Dissertation

A dissertation in a topic connected with his/her special discipline is a necessary 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 desires 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 Requirements

The minimum requirement for admission to M.Phil. is 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 (MA/MSc./MED.). The university preserves 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 MPhil. 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 School of Science, Kathmandu University, Dhulikhel.

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.

The degree is awarded on the basis of three components:

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

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

Fee Structure

The total fee for the entire M. Phil. program for full time as well as for part time course is NRS 114, 000/-.

This does not include the cost of books, stationery, food, lodging and bus fare.

The tuition fee will have to be paid in SIX installments (for full time course) and in TEN 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 Assistantships (For Full -Time Program)

Teaching assistantship can be offered to a few deserving candidates of MPhil. full-time course to meet the fees charged (full or partial) by the university. The candidate should teach at least 12 - 15 hrs per week and perform other duties as asked by the head of the department. However, the department is not obliged to offer such teaching assistantships to all the enrolled candidates. The department may not offer assistantship to any of the candidates if it feels so. The department, as per its need, will 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 central library for the students. The School of Science has a separate computer lab with Internet facilities for the postgraduate students.

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

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M. Phil. Program in Mathematics



KATHMANDU UNIVERSITY
School of Science
Department of Natural Sciences

2005

Introduction

Realizing the necessity of research-based program in physics, the school has prepared a modified M. Phil. Course. The highlights of the course are: academic experts of allied fields are involved in teaching theory and laboratory practice; research thrust is given so that after undergoing the course the incumbents could pursue to higher education and Ph. D. degree; the course contents are updated and made thoroughly applied in nature to keep abreast with current developments in research and development in applied physics.

Objective

The objective of the program is to create scholars with strong teaching and research background. The specific objective is to initiate advanced research in applied physics - particularly in promising the field of energy, environment, biophysics and material science and to develop expertise in these fields. The course has been formulated to meet the following objectives:

- to shift the focus from theoretical to applied physics
- to optimize the resources available in the department
- to make the program compatible with current research in applied physics

General Information about the Program

Duration of the course

This program is aimed for both full time and part-time students. The duration for the full time M. Phil will be 18 months (3 semesters) of full time study. For part-time candidates, the duration will be 30 months (5 semesters) of study. Upon the availability of the resource persons, the classes can be held either in the morning or in the afternoon session.

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

Course Structure (For full-time candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	a. Low Temperature Plasma Physics	3
	b. Environmental Bio- Physics	3
	c. Solid State Physics	3
	d. Experiments in Modern Physics	3hrs. /week
Any four courses from the following group		
II	a. Renewable Energy	3
	b. Advanced Quantum Mechanics	3
	c. Nuclear Physics	3
	d. Numerical Computation	3
	e. Mathematical Physics	3
	f. Mathematical Modeling	3
	g. Dissertation Preparation starts (Self study, seminars and Software applications)	
III	Dissertation	9
Total		30

Course Structure (For part-time Candidates)

<u>Semester</u>	<u>Course</u>	<u>Credit</u>
I	a. Low temperature Plasma physics	3
	b. Environmental Bio- Physics	3
II	a. Solid State Physics	3
	b. Renewable Energy	3
Any three courses from the following		
III	a. Advanced Quantum Mechanics	3
	b. Nuclear Physics	3
	c. Numerical Computation	3
	d. Mathematical Modeling	3
	e. Mathematical Physics	3
IV	a. Experiments in Modern Physics	3hrs. /week
	b. Dissertation Preparation starts (self study, seminars and software applications)	
V	Dissertation	9
Total		30

Dissertation

A dissertation in a topic connected with his/her special discipline is a necessary 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 desires so.

Evaluation:

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Admission Requirements

The minimum requirement for admission to M. Phil. is at least second division with 50% or a CGPA of 2.5 standing out of 4 or an equivalent grade in Master's level in Physics. The university deserves 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 to run the program or not. Program will be run at Kathmandu University, Dhulikhel.

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The degree is awarded on the basis of three components:

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Library, Laboratory and Computer Lab

To facilitate teaching, learning and research activities, the university has a central library for the students. The department is developing a separate lab for the experiments on Advanced Physics. The school of science has a separate computer lab with Internet facilities for the postgraduate students.

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

M. Phil. Program in Physics



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