

Information and HBNI Guidelines for Faculty (Mathematics)

HBNI-IMSc Office

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1 Introduction

The Homi Bhabha National Institute is a conglomeration of DAE aided institutes, called the *Constituent Institutes* (CI's), IMSc being one of them. Its head office is at BARC, Mumbai. HBNI is a Deemed University. It has several *Boards of Studies* responsible for the academic programs offered at various CI's. At IMSc, we offer academic programs under the *Board of Mathematical Sciences* and the *Board of Physical Sciences*. We offer the *Ph.D.* and the *Integrated Ph.D.* programs.

As a CI of HBNI, we follow certain procedures in conducting the academic programs leading to the Degrees granted by HBNI. The specific details for the Ph.D. programs in Mathematics are detailed below.

2 HBNI Faculty

As a Constituent Institution of the HBNI, IMSc faculty members are to be formally recognised as guides for the Doctoral Degree by the relevant board of studies.

For new members who join the IMSc faculty, there is a prescribed form, available on the HBNI web-site, which needs to be submitted to the HBNI office at IMSc. This is then sent to the appropriate *Board of Studies* for formal approval.

This recognition is a requirement of HBNI for being a Ph. D. guide.

3 Monitoring Committees

Shortly after registration, every student is assigned a *Monitoring Committee*. This committee consists of 4 members who are picked from the teachers of the academic year. The Academic coordinator forms these committees in consultation with the teachers and communicates the same to the student.

This committee supervises the student during the first year here. At the end of each of the two semesters of the first year, this committee meets to review the progress of the students. The second meeting is held after each student gives a seminar as part of the 'research methodology' requirement. At the second meeting, a tentative advisor is assigned to each student who will then form a student-specific monitoring committee.

This (or a subsequent - see below) monitoring committee continues to supervise the student till the student has been assigned a Ph D advisor and a *Doctoral Committee* is recommended in consultation with the advisor.

The monitoring committee is expected to play a general advisory role for the student, conduct the *Oral Comprehensive Examination* at the end of the final semester and make a recommendation for promotion of the student to the Doctoral level.

This promotion to the doctoral level is expected to be finished no later than the end of the 4th semester here for Ph.D. students and the end of the 5th semester here for Integrated Ph.D. students, as detailed below.

Ph.D. students: They have an opportunity to take the Oral Comprehensive exam at the end of their 3rd semester. If they fail to clear this, they have another opportunity at the end of the 4th semester with this or another monitoring committee. If this is also not cleared, the student may be offered the option to exit with an M.Phil. degree at the end of the 3rd year.

Integrated Ph.D. students: The Oral Comprehensive exam is synchronous with the M.Sc. thesis defence. If it is not cleared, the student will be given one more opportunity at the end of the 5th semester, failing to clear which will lead to termination of registration.

All monitoring committees are expected to meet the student at least once a semester to assess the student's progress and advise/assist the student if needed. The committee report is to be sent to the HBNI Cell by the end of each semester.

The purpose of the Oral Comprehensive Examination is to determine if the student has adequate proficiency in the course work to undertake doctoral research. The syllabus for the Oral Comprehensive Examination is prescribed by the Monitoring Committee. In case the student's performance is not satisfactory, the student is given one more opportunity with a possibly different examination committee.

The Oral Comprehensive Examination is to be conducted by July 15th/December 15th.

The Convener approves leave, use of contingency grant etc. for the corresponding student.

The course teachers are expected to inform the Convener of the corresponding Monitoring Committee in case of continual absence of a student.

4 Course Work

The detailed course structure as well as syllabi are determined by our faculty and submitted to the appropriate Board of Studies for approval. Within the degree requirement of number of credits, courses etc the courses and their syllabi can be tuned to our needs as well as revised from time to time. This has already been done and the approved syllabi are available on the web-site.

The semesters run during August - December and January - May.

The main points to note **for Mathematics** are:

1. The announced time schedule for the courses should be adhered to and the syllabi should be followed to the maximum extent possible.
2. The evaluation procedure is left to the discretion of the course teacher and may depend on various parameters such as internal assessment, mid-term examinations and a final examination. *It is only fair that the evaluation procedure is announced to the students at the beginning of the course.*

The final evaluation is to be conveyed to the HBNI office in the form of marks and a corresponding grade. **The grades are due by December 31 and May 31 respectively.** The mapping between the marks and the grades is:

Marks	Grade
90 – 100 %	A
80 – 89 %	B
70 – 79 %	C
60 – 69 %	D
< 60 %	F

Qualifying GPA's: The *Grade Point Average* is computed by assigning 4 points to an 'A', 3 points to a 'B', 2 to a 'C' and 1 to a 'D' and taking the average.

A single 'F' will result in termination of registration and the student will have to leave the Institute.

Qualifying GPA for proceeding to Ph. D. is ≥ 2.0 ;

For Integrated Ph D students, a GPA ≥ 2.0 qualifies for the Master's Degree.

A GPA below 2.0 terminates the registration.

Master's thesis: For integrated PhD students, a Master's thesis in the final semester of the first two years is a requirement. The student undertakes research and prepares a *thesis* under the supervision of the guide. Once the guide is satisfied, the student submits the thesis to the *monitoring committee* which evaluates it. The Master's thesis evaluation consists of evaluation of the thesis as well as an oral presentation and is conveyed in the form of marks and the corresponding grade.

5 Doctoral Committees

After completing successfully the course work and the oral comprehensive examination, the student is expected to explore and settle with a faculty member to be his/her doctoral guide. The guide then forms the *doctoral committee* consisting of at least four members including the guide. The *Chair* of the committee must be a professor of rank 'H' or above. Guide and the chair can be the same person.

There can be more than one guide. The second guide can be from another CI or any other institute with which IMSc has a relevant MoU.

The constitution of the Doctoral Committee is to be conveyed to the HBNI cell in a prescribed form, available on the web-site. At this stage, the monitoring committee's role is over.

The Doctoral Committee is constituted when the Oral Comprehensive is successfully completed.

The Doctoral Committee is expected to monitor the progress of the student through the Doctoral Committee meetings required to be held **at least one per year** although once a semester is recommended. The Doctoral Committee's minutes are to be filed with the HBNI Cell. Prescribed form is available on the web-site.

These reports constitute the papers required to be submitted to the Board of Studies along with synopsis for proceeding with thesis submission and evaluation process.

Apart from monitoring the progress of the student, the doctoral committee also takes the following decisions:

1. Assist and ensure that adequate amount of published research is completed during the **5 year normal tenure** of the registration. The UGC guideline stipulates a minimum of one journal publication for initiating thesis submission and evaluation process.
2. The Committee satisfies itself that the process can be initiated. It advises the student to prepare a *synopsis* and also approves a list of *six* possible examiners.
3. The committee is empowered to recommend an extension of the tenure by one year giving valid reasons. *This must be approved by the Director.*
The extension beyond the 6th year has to be approved by the Board of Studies.
4. In case of unsatisfactory progress of the student for any reasons, the committee recommends alternative advisor and/or thesis problem. Any changes in the Committee, are to be filed with the HBNI Cell.

In spite of making adequate effort, if the progress continues to be unsatisfactory, the committee may also write a *closure note* and recommend termination of the registration.

6 The Thesis Submission Process

Below is detailed the process of thesis submission.

1. Doctoral Committee determines that the student has adequate work and recommends that the student may prepare a synopsis and begin writing the thesis. The committee draws up a list of *six* possible examiners for the thesis.
2. Once the synopsis is ready, it is submitted to the HBNI Cell along with the list of examiners, with their addresses and emails.
3. The HBNI cell forwards the synopsis, the Doctoral Committee's reports and the list of examiners to the Convener, Board of Studies (Mathematical Sciences), HBNI. The Board of Studies grants permission to submit the thesis and selects an ordered list of *four* examiners and sends it for a final approval to HBNI. The approval for the shortlist is conveyed to the Dean (Mathematical Sciences, IMSc).
4. The Dean, IMSc receives the approval and the selected examiners. The student submits the thesis to the HBNI Cell and the Dean gets the thesis examined by *two* examiners. This may take a few months depending upon the examiner's promptness.
5. Once the two reports are received, the advisor is informed. The viva is arranged. The viva board consists of the Doctoral Committee and an external examiner. The external examiner is one of the two examiners, usually the Indian one (and the first one if both are Indians).

6. The thesis is prepared for the final submission, incorporating all corrections/modifications recommended by the examining committee.

Two hard bound copies along with the soft copy of the final corrected version of the thesis is submitted to HBNI office.

The Dean, IMSc issues a viva completion certificate to the student.

7. After a scrutiny of all papers, the HBNI, central office, issues a provisional certificate followed by the final degree certificate.

7 Closure

In the normal course, the student completes the program successfully and a simple closure statement would suffice. In some cases, the student may be unable to complete the program. In such cases, the Doctoral Committee may write a closure note summarising the circumstances and recommending termination of the registration. If a student leaves *before* qualifying for the Ph. D., a closure note may likewise be filed by the Monitoring Committee.