

# **Information and HBNI Guidelines for Faculty (Theoretical Computer Science)**

**HBNI-IMSc Office**

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September 22, 2019

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## 1 Introduction

The Homi Bhabha National Institute (HBNI) is a Deemed to be University and the Institute of Mathematical Sciences, Chennai is one of the eleven Constituent Institutions (CI's). The HBNI website is at

<http://www.hbni.ac.in/>

The HBNI head office is at BARC, Mumbai. HBNI has several *Boards of Studies* that administer the various academic programs offered at the different CI's. At IMSc, we offer academic programs under the *Board of Mathematical Sciences*, the *Board of Physical Sciences*, and the *Board of Life Sciences*. We offer the *PhD* and the *Integrated PhD* programs.

We follow certain general procedures in conducting the above academic programs leading to degrees granted by HBNI. The specific details for the PhD programs in **Theoretical Computer Science** are described 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.

The above mentioned recognition is a requirement of HBNI for being a PhD guide.

## 3 Monitoring Committees

Shortly after registration, every student is assigned a *Monitoring Committee*. This committee consists of three members, including a convener, who are picked from Theoretical Computer Science (TCS) faculty members. The academic coordinator forms these committees in consultation with the faculty and communicates the same to the student and the HBNI cell (and dean at IMSc for Math. Sciences). The monitoring committee will monitor the student's progress until the student acquires a PhD advisor and a *Doctoral Committee* is formally constituted. The doctoral committee is formed by the advisor in consultation with the TCS faculty members and this is communicated to the HBNI cell. In case the student needs more time to acquire a PhD advisor, the monitoring committee will continue in its advisory role for the student, conduct the *Oral General Comprehensive Examination* (OGCE) after successful completion of course work (and Master's thesis in the case of integrated PhD students) and make a recommendation for promotion of the student to the Doctoral level.

1. The monitoring committee is expected to monitor the student's progress and advise the student if required. After each semester, the monitoring committee will formally meet the student to assess the progress, and the committee report will be submitted to the HBNI Cell.
2. In the case of integrated PhD students, the evaluation of the Master's thesis will be at the end of the first two years. The convener of the monitoring committee, in consultation with the project

guide, will request another faculty member to evaluate the project report. The student will make an oral presentation of the project work as a regular seminar. The Convener then conveys the project evaluation in terms of marks and a grade to the HBNI Cell.

**The project/thesis evaluation is expected to be completed by June 30th.**

The purpose of the *Oral General Comprehensive Examination* is to determine if the student has adequate proficiency in the prescribed course work to undertake doctoral research. The syllabus for the Oral General Comprehensive Examination is prescribed by the monitoring committee in consultation with the academic coordinator. If the student's performance is not satisfactory, the student will be given another opportunity to clear the examination and a second failure will mean the student cannot continue in the PhD program.

**The Oral General Comprehensive Examination is expected to be conducted by July 31st after successful completion of prescribed course work (and Master's thesis in the case of integrated PhD students).**

3. The Convener of the monitoring committee approves leave, use of contingency grant etc. for the corresponding student.
4. 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.

The semesters run during August - November and January - April.

The main points to note for (**Theoretical Computer Science**) are:

1. The announced time schedule for the courses should be adhered to and the syllabi should be followed to the maximum extent possible. The general understanding is that innovative modifications of the contents is generally limited to about 20 percent of the syllabus.
2. The evaluation procedure is left to the discretion of the course teacher and is expected to contain internal assessment, a mid-term 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 15 and May 15 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. An "incomplete course" automatically entails an 'F' grade leading to termination of the registration.

The student must maintain a GPA of  $\geq 3.0$  in order to proceed to PhD. If an integrated PhD student secures GPA below 3.0 but  $\geq 2.0$ , then the student will be allowed to stay in the Master's program and will have to leave after obtaining MSc. Likewise, if a PhD student secures GPA below 3.0 and  $\geq 2.0$  then the student can continue only as an MPhil student and will have to leave after completing MPhil.

A GPA below 2.0 would terminate the registration.

**Master's thesis:** For integrated PhD students, a Master's thesis in the second year is a requirement. The student undertakes research and prepares a *project report* under the supervision of the guide. Once the guide is satisfied, the student submits the report to the chair of the *monitoring committee* who, in consultation with the guide, appoints an examiner for the project report. The Master's thesis evaluation consists of evaluation of the report 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 five members including the guide. The *Chair* of the committee must be a professor of rank 'H' or above. The *Convener* of the committee is the Guide.

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 co-guide, if any, is a sixth member of the Doctoral Committee.

*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 must be constituted within six months of the Oral General Comprehensive Exam.**

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**. 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 currently stipulates a minimum of one journal

publication for initiating thesis submission and evaluation process. Publications should explicitly list HBNI along with IMSc in the student's author affiliation.

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. The student gives a pre-synopsis seminar, open to all and attended by the Doctoral Committee, describing the research done and the outline of the proposed thesis.
2. 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.
3. Once the synopsis is ready, it is submitted to the HBNI Cell along with the list of examiners, with their addresses and emails.
4. The Dean forwards the synopsis, the Doctoral Committee's reports and the list of examiners to the Chair, Board of Studies, HBNI. The Board of Studies grants permission to submit the thesis and selects an ordered list of *four* examiners. This is approved by the HBNI Central Office and conveyed back to Dean, IMSc after verifying that all required documents are on file.
5. Dean, IMSc receives the permission 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.
6. 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).
7. 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.

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

## 7 Closure

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 PhD, a closure note may likewise be filed by the Monitoring Committee.