

# **Guidelines of the Chemistry Subject Board**

## **Chemistry Ph.D. and Integrated M.Sc.-Ph.D. Programmes at TIFR**

**(Applicable from August 2015)**

**[The following guidelines are applicable for those who intend to obtain Ph.D. and Integrated M.Sc.-Ph.D. degree from TIFR through the Chemistry Subject Board]**

In August 2015, the Chemistry Subject Board started Integrated M. Sc.-Ph. D. programme, in addition to the regular Ph. D. programme. An M. Sc., an M. Tech., a B. E. or a B. Tech. degree is the basic requirement for admission to the Ph. D. degree programme. B. Sc. graduates in any field of science are eligible for admission to the Integrated M. Sc.-Ph. D. programme. All students are selected through the [TIFR Research Scholars' admission procedure](#) and admitted to the Institute as graduate students. Annual progress of these students is monitored by the Chemistry Subject Board or a similar body located in centres outside the Colaba campus.

### **1. Graduate Programmes:**

At present, Ph. D. and Integrated M. Sc.-Ph. D. programmes are conducted by the Chemistry Subject Board. The Integrated M.Sc.-Ph. D. programme is for the students joining the graduate programme with a B. Sc. as their highest degree. The Ph.D. programme is for those joining the graduate programme with an M. Sc., a B. E. or a B.Tech. as their highest degree. Keeping their future prospect of employability in Indian universities in mind, however, the candidates with a B.E./B.Tech. degree may wish to opt for the Integrated M.Sc.-Ph.D. programme at the time of joining the Institute for earning an M. Sc. degree. Later requests from them for obtaining an M.Sc. degree will not be entertained.

### **2. The Course Structure:**

The Graduate course structure for fulfilling the requirements of Ph. D. and Integrated M. Sc.-Ph. D. degrees has regular classroom lecture courses,\* short projects and

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\* A student may request the Course instructor for an exemption, if the student thinks that he/she is well versed with the course. The instructor, at his/her own discretion, may give a comprehensive test on the proposed course to grant the desired exemption. The minimum passing marks for the comprehensive test will be 65%. Qualified student may be given credit for the course without requiring to attend the classes.

written theses. All regular courses of one semester long carry 4 credit points. Short courses, generally taught during July, carry 2 credit points. All semester-long projects carry 12 credit points, except the project on “Experimental Techniques (Laboratory visits)”, offered during August-December, which carries 10 credit points. A project work and associated final presentation for the M. Sc. component of the Integrated M.Sc.-Ph.D. candidates carries 24 credit points. Annex I shows the various grade points used for evaluating courses and projects.

### ***2.1 Requirements for registration for the Ph. D. degree:***

During the first year a student will have to complete **6 lecture courses, 1 laboratory course, and 1 project, and a short course**, which is generally taught in July. The first project (called Project-A) will have to be carried out during the second semester of the first year. The second project (called Project-B) will have to be completed in the 3rd semester (i.e., in the first half of the 2nd year). **Under no circumstances will Project-A and Project-B be done with the same supervisor.**

The supervisors for Project-A shall be regular faculty members of the centres, with which the students are normally associated. For the students at DCS, Colaba, the faculty members of DCS, and for students at TCIS, Hyderabad, the deemed chemistry faculty members of TCIS will be the guides. Students will choose the topic of Project-B and its guide in consultation with their Ph. D. guides (see Section 2), and register the same with the CSB or the similar body at TCIS, for approval.

By completing these courses and projects the students will earn a total of 60 credit points (see Section 2.2 for the Time Lines). Those students admitted to the regular Ph.D. programme will then be eligible to register for the Ph. D. degree in Chemistry.

Students admitted to the Integrated M.Sc.-Ph.D. programme will require 100 credit points be eligible to register for the Ph.D. degree in Chemistry. In addition to the courses and projects covered by the regular Ph.D. students (amounting to 60 credits mentioned above), the Integrated M.Sc.-Ph.D students will be required to complete four additional courses approved by the CSB and also to work towards a research project, which will contribute to an M. Sc. thesis. During this project, the students may wish to extend the research work undertaken during Project-A or Project-B. This project is expected to start 1.5 years (after the third semester) from the student joining date and the duration of this project is set to be 1 year. On completion of the research project, the candidates will give a research seminar describing their work, which will be evaluated and graded by a departmental academic committee. Taken together, the four extra courses (16 credits) and a successful project seminar presentation will give the Integrated M.Sc.-Ph.D. students additional 40 credit points (apart from 60 credit points from regular Ph.D. courses/projects) and make them eligible to register for their Ph.D. degree in chemistry. Subsequently, these students will write an M.Sc. thesis, based on their master’s project, which will be evaluated jointly by an external expert and the

master's thesis supervisor, and defended by the candidate in an open seminar, followed by an oral examination. While no specific time limit is imposed on the candidate to submit this thesis, it must be completed before the candidate submits the Ph. D. thesis for evaluation. The research work carried out for the M. Sc. thesis shall not be included in the Ph. D. thesis

Annex II shows the credit requirements for the graduate courses and projects. In addition, both the programmes require candidates to undertake a comprehensive research project leading to a written Ph. D. thesis, which will be evaluated by a team of two external experts and the thesis supervisor, defended by the candidate in an open seminar, followed by an oral examination.

All research scholars admitted to the graduate programme in Chemistry are expected to take the courses and projects offered by the regular faculty members of the centres, with which the students are normally associated. If any exception is sought by a research scholar, the specific request must be made to the Convener, Chemistry Subject board, for approval before the commencement of the course or the project.

## **2.2 Time Lines (tentative):**

<i>August 1<sup>st</sup> week (First Semester)</i>	: <i>Courses begin.</i>
<i>Dec. 15 (First Semester)</i>	: <i>Laboratory Course Seminars</i>
<i>Dec. 3<sup>rd</sup> week (First Semester)</i>	: <i>End of courses and examinations.</i>
	<b><i>Last date for submission of Faculty interaction form and Project-A option form</i></b>
<i>Dec 31 (First Semester)</i>	: <i>End of First Semester</i>
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<i>Jan. 3<sup>rd</sup> week (Second Semester)</i>	: <i>Courses and Project-A begin.</i>
<i>May 2<sup>nd</sup> week (Second Semester)</i>	: <i>End of courses and project-A and exams.</i>
<i>May 31 (Second Semester)</i>	: <i>End of Second Semester</i>
	<b><i>Last date for selection of Ph. D. guide and Registration of Project-B (for 3<sup>rd</sup> semester)</i></b>
<i>July 1-July 31 (Second Semester)</i>	: <i>Short course (mandatory), whenever announced</i>
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<i>August 1 (Third Semester)</i>	: <i>Project-B begins.</i>
<i>Dec. 3<sup>rd</sup> week (Third Semester)</i>	: <i>End of Project-B and evaluation seminar.</i>
<i>December 31 (Third Semester)</i>	: <i>End of Third Semester</i>
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<i>Jan 3<sup>rd</sup> week (Fourth Semester)</i>	: <i>M. Sc. research project begins.</i>
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Students should register for the Ph.D. degree as soon as they complete the requisite total of 60 credit points (for regular Ph.D. students) or 100 credit points (for Integrated M.Sc.-Ph.D. students) See section 2.1.

### ***2.3 Examination Passing Criteria:***

Minimum passing marks in every course/project is 50%. Students not passing in a particular course or a project will be required to repeat the same in the next available opportunity. Students failing in more than 1 course or project (for regular Ph.D. students) or 2 courses or projects (for Integrated M.Sc.-Ph.D. students) during the course work period will have to leave the graduate programme. If a student fails to pass a course or a project even in the second attempt, he/she will have to leave the graduate programme.

### **3. Selection of Ph. D. and M. Sc. Guides:**

All students must decide his/her Ph. D. guide before May 31 of the first year and inform the Chemistry Subject Board accordingly (see Section 2.2).

Choosing a Ph. D. or an M.Sc. guide is a responsibility of the research scholars. Any Faculty member of TIFR can in principle serve as a guide for the student, so long as the subject/project of the thesis is approved by the CSB. A student can be registered with an academic staff member as a guide who has at least 3 years of service before retirement, from the date of registration. Faculty members who have less than 3 years of service before retirement can be a guide only if a co-guide is identified who would be responsible for the completion of the research project and be able to take over as a regular guide, once the original guide retires. Allocation of the Ph. D. guide will primarily be based on the choice of the student, but two students of the same batch wishing to join the same Guide for Ph. D. will not be generally approved. The names of Faculty members who may accept student in a given year will be informed to the students in the first semester. A Faculty member will generally accept only one student from a given batch. A second student will be allowed to join a Faculty member who has already accepted one student of the same batch, only if there are no other Faculty members available as guides for the student and the concerned Faculty member agrees to accept two students. If a student fails to select a Ph. D. guide as per the guidelines of the Subject Board, then he/she will have to leave the graduate programme. The guide for the M.Sc. thesis may either be the Ph.D. guide of the student, or any other faculty member to be decided in consultation with the Ph.D. guide and approved by the CSB.

### **3.1 Thesis monitoring committee (TMC):**

Every Ph. D. student will have a thesis monitoring committee (TMC), to be constituted after they register for the Ph.D. programme. This committee will consist of the thesis guide and at least two other Faculty members. The student should have regular interactions (minimum TWO meetings in a year) with the TMC and a formal report of the thesis committee on the progress of the student will be required for consideration of extension of the Research Scholarship of the student at the end of each academic year. Annex III gives the format to be used for writing the progress

report of the student. Each registered doctoral student will also be required to give at least one Departmental Seminar before May 31 in each Academic year.

#### **4. Registration for Ph. D. and Submission of Thesis:**

Once the course and project requirements are completed and the students have earned 60 credits (regular Ph.D. students) or 100 credits (Integrated M.Sc.-Ph.D. students), they are allowed to register with the University Cell for Ph. D. degree, after a specific area of work for the Ph.D. thesis has been mutually agreed upon between the student and the thesis supervisor. The registration is done by filling out a prescribed form, listing the name of the student, a tentative title of the proposed thesis, a brief outline of the proposed work, co-signed by the thesis supervisor, and the Convener of the Chemistry Subject Board.

In case a candidate wishes to change the title of the thesis after registration, it may be done at the time of submission of synopsis by notifying the Chemistry Subject Board.

The minimum period between the date of joining and the submission of the synopsis will be 2 years. The period between the submission of synopsis and the submission of thesis should not exceed 6 months. The student must have at least one paper, as a main contributor, accepted for publication in a scientific journal before submission of the synopsis of the Ph. D. thesis. Annex IV gives the process of submission of the Ph. D. synopsis in detail.

Students admitted to the Integrated M.Sc.-Ph.D. programme will start their M.Sc. research project in the beginning of the 4th semester and register their project by filling out a prescribed form, listing the name of the student, a tentative title of the proposed thesis, a brief outline of the proposed work, co-signed by the M.Sc project supervisor, and the Convener of the Chemistry Subject Board. The students are required to write a brief project report and successfully present the research work in a seminar after one year of registration. Subsequently, they will submit a synopsis and a written thesis of their work. The synopsis will be evaluated by a three-member committee, constituted by the CSB, subsequent to which an external examiner will be appointed. Both the external examiner and the M. Sc. guide will evaluate the thesis. The candidate will then give an open seminar describing the work, and defend the thesis. Annex V gives the process of submission of the M. Sc. synopsis in detail.

##### ***4.1 Award of Ph. D. degree***

After the successful completion of 60 credit points, the Ph. D. thesis and its defense by the candidate in a seminar and oral examination, a provisional Ph. D. degree certificate will be issued by the University Cell.

##### ***4.2 Award of M. Sc. and Ph.D. degrees***

After the successful completion of 100 credit points, the M.Sc. thesis and its defense and the Ph.D. thesis and its defense by the candidate in a seminar and oral examination, provisional M. Sc. and Ph. D. degree certificates will be issued by the University Cell. In exceptional cases, an M.Sc. degree alone may be awarded. See Section 5.

## **5. Provision of leaving the Integrated M.Sc.-Ph.D. programme with an M.Sc. degree**

The students admitted to the Integrated M.Sc.-Ph.D. programme are normally expected to work towards fulfilling the requirements for the dual degrees. If some students, however, wish to leave the graduate programme with an M. Sc. degree, they are permitted to do so after a minimum period of 3 years of stay. After the successful completion of 100 credit points, the M.Sc. thesis and its defense, a provisional M. Sc. degree certificate will be issued by the University Cell. Students wishing leave the graduate programme with an M.Sc. degree are required to give a written notice of their intention, before the end of second year. This will have ramification on their scholarship as per the extant rules of the Institute.

If the performance of a student admitted to the Integrated M.Sc.-Ph.D. programme is found to be unsatisfactory over a prolonged period, but at the same time the student has earned the 100 credit points and successfully completed the M.Sc. thesis, the student may be relieved from the Graduate programme after awarding him/her an M.Sc. degree.

## **6. Code of Conduct:**

The students must refrain from any kind of academic misconduct. The following acts constitute an academic misconduct: copying of answer sheets either in examination or home-work assignments, absenteeism from classes, fabrication or falsification of data/results, plagiarism, etc. By no means is this list exhaustive. The acts listed above and any act that is not listed here but perceived as an academic misconduct by the CSB will invite disciplinary action, including expulsion of the students engaged in such acts.

## **7. Any deviation from the above guidelines must be brought to the Chemistry Subject Board well in advance for appropriate action.**

## ANNEX I

Grade table for courses and projects

<b>Numerical score out of 100</b>	<b>Grade points</b>	<b>Letter grades</b>	<b>Meaning</b>
<b>95-100</b>	<b>10</b>	<b>O</b>	<b>Outstanding</b>
<b>85-94</b>	<b>9</b>	<b>A<sup>+</sup></b>	<b>Excellent</b>
<b>75-84</b>	<b>8</b>	<b>A</b>	<b>Very good</b>
<b>65-74</b>	<b>7</b>	<b>B<sup>+</sup></b>	<b>Good</b>
<b>55-64</b>	<b>6</b>	<b>B</b>	<b>Above average</b>
<b>50-54</b>	<b>5</b>	<b>C</b>	<b>Average</b>
<b>0-49</b>	<b>0</b>	<b>F</b>	<b>Fail</b>

1. Instructors/evaluators should give only the numerical grades, which will be converted to the appropriate grade points and letter grades
2. For the projects, the student is required to obtain a passing grade in the seminar as well as in the supervisor's grade.

## ANNEX II

Credit requirements for Ph. D. and Integrated M. Sc.-Ph. D. degrees

### Duration and credit points of courses

Core course:  $\geq 36$  hours  $\rightarrow$  4 credits

Elective (topical) course:  $\geq 36$  hours  $\rightarrow$  4 credits

Short course: 18 hours  $\rightarrow$  2 credits

Duration of a project: 12 weeks of work, 6 hours per day  $\rightarrow$  12 credits

Experimental techniques (Lab visits): 12 week  $\rightarrow$  10 credits

### Requirements for Ph. D. degree:

They will take 6 full courses, 1 short course, 1 Experimental Techniques (“Lab visits”) project, and two projects and write a Ph.D. thesis.

Credit for the 6 courses: 24

Credit for 1 short course: 2

Credit for “Lab visits”: 10

Credit for 2 projects: 24

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**Total credits: 60**

### Requirements for Int. M.Sc.-Ph. D. degree:

They will take 4 extra courses, do an M.Sc. research project and also write an M. Sc. thesis.

Credit for the 4 courses: 16

Credit for the M. Sc. project: 24

Common credits for the Ph.D. degree: 60

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**Total credits: 100**



## ANNEX III

**REPORT ON THE PROGRESS OF Mr./Ms. \_\_\_\_\_**

**Ph. D./Int. M. Sc.-Ph. D. Scholar in the Department of Chemical Sciences/TCIS**

**Date**

**Name of the student:**

**Year of entry into Graduate School:**

**Whether B.Sc. or M. Sc. while joining:**

**Name of the advisor:**

**Department grades in the last 2 years:**

**List of publications:**

**Topic of the thesis:**

**Summary of work done during the current year** (a small paragraph)

**Plans for the next year:**

**Expected date for completing the Ph. D. (for 4th year onwards):**

**Comments by the TMC on the seminar/presentation and progress made in this year:**

**Recommendations of the TMC:**

SIGNATURES:

(Member 1)

(Member 2)

(Member 3)

## ANNEX IV

### Synopsis submission procedure for Ph. D. theses

1. The length of the main text of a synopsis including references and figures (if any) is limited to 12 pages, excluding the mandatory materials, such as the list of publications, statement regarding new facts, etc. The text is to be prepared using page size A4, line spacing 1.5 and Times Roman 12-pt font.
2. The thesis supervisor will send to the Convener the soft copy of the written synopsis along with 5 names of potential examiners, at least 10 calendar days before the seminar is scheduled. It would be nice if the supervisor gets their willingness before suggesting the names of the potential examiners. But that is not mandatory.
3. The Convener of the Subject Board, with the advice of the Subject Board members, finalizes the list of examiners and makes the committee. The members of this synopsis evaluation committee may not be exactly the same as the names suggested by the supervisor. However, the two members (other than the thesis supervisor) of the three-member committee of the candidate will be part of the evaluation committee. One member will be designated as the Coordinator.
4. Our Departmental office sends the written synopsis along with an evaluation form to the members of the evaluation committee by computer mail. The office also puts up a notice announcing the synopsis presentation seminar.
5. After the seminar is over, all the members of the evaluation committee meet with the candidate briefly to point out if there are major issues with the content (extent of work), or on the write-up. If the extent of work requires major revisions in terms of more experiments or revised interpretation or both, the committee collectively informs the candidate of the same. This will be treated as an exceptional case, and will also require major revision of the written synopsis. Otherwise, as a regular case, the candidate is asked to leave the room, and the committee members discuss together to decide if synopsis broadly qualifies for submission. Individual members can always give advice to the candidate on the write-up. The members also complete the evaluation forms and give them to the Coordinator right there.
6. If some members of the evaluation committee do not submit their evaluation forms, they are required to do so within 10 days of the seminar. If certain members of the synopsis evaluation committee do not give their feedback to the candidate within 10 days of the seminar, the Convener would impress upon them to allow the candidate to submit the synopsis without waiting for their feedback any longer.
7. The candidate meets all the members of the evaluation committee and seeks their opinion/suggestions on the written synopsis, and incorporates them in the synopsis. The revised synopsis, along with some filled-in forms, as required by the University Cell, is submitted to the University cell, through the Convener of the Subject Board. This will be done within one month of presenting the seminar.
8. As a regular case, if the candidate delays the submission of synopsis beyond the recommended period of one month, the presented synopsis and the seminar may be declared null and void, and the candidate would have to write a fresh synopsis and give a fresh seminar. For an exceptional case as mentioned above, the candidate may take as much time as necessary to complete extra experiments, revise interpretation, and write a fresh synopsis. This revised synopsis will be sent to all the members of the evaluation committee for approval, before the candidate is allowed to submit the synopsis.
9. The Convener gives to the candidate a summary of the evaluation committee's reports by averaging the marks of all the committee members.

## ANNEX V

### Synopsis submission procedure for M. Sc. theses

1. The length of the main text of a synopsis including references and figures (if any) is limited to 12 pages, excluding the mandatory materials, such as the list of publications, statement regarding new facts, etc. The text is to be prepared using page size A4, line spacing 1.5 and Times Roman 12-pt font.
2. The thesis supervisor will send to the Convener the soft copy of the written synopsis along with 3-4 names of potential evaluators of the synopsis. It would be nice if the supervisor gets their willingness before suggesting the names of the potential evaluators. But that is not mandatory.
3. The Convener of the Subject Board, with the advice of the Subject Board members, finalizes the list of evaluators and makes the committee of 3 members. The members of this synopsis evaluation committee may not be exactly the same as the names suggested by the supervisor.
4. Our Departmental office sends the written synopsis along with an evaluation form to the members of the evaluation committee by computer mail.
5. The members of the evaluation committee are expected to either approve the synopsis or inform the candidate of the modifications they feel necessary, within 10 days. If they fail to do so, the Convener will impress upon them that the candidate may not wait for their evaluation or feedback, and submit his/her synopsis.
6. The candidate meets all the members of the evaluation committee and seeks their opinion/suggestions on the written synopsis, and incorporates them in the synopsis. After receiving positive feedback from all the members of the evaluation committee, the Convener of the Subject Board will forward the revised synopsis, along with necessary filled-in forms, to the University Cell.