

# ACADEMIC GUIDELINES

## 2018-19



## 1. General

The office of the Dean of Academic Affairs (DoAA) is called the Academic Cell. It takes care of all the academic matters of the Institute – from admission of students to the awarding of degrees.

### 1.1 Responsibilities:

The Academic Cell decides on all academic issues both for Undergraduate and Postgraduate students and implements the decisions taken by the Academic Senate. The Academic Cell is further responsible for –

- i. Receiving, processing and maintaining all records related to the Academic program – curricula, Academic Calendar, registration of students, leave of students, examinations, grades and award of degrees and prizes / medals at the annual Convocation of the Institute.
- ii. Disseminating information pertaining to all academic matters
- iii. Issuing necessary memoranda/orders related to academic matters
- iv. Acting as a platform of communication between students, instructors and the Departments
- v. Preparing Time Table for regular classes and examinations.
- vi. Preparing grade-cards, transcripts, provisional certificates, medal certificates, degree certificates, CNR Rao Foundation Prize certificate, etc. DoAA will be the authorized signatory. The Chairperson, BoG (Board of Governors), the Chairman, Senate and the Registrar will be the signatories for degree certificates.
- vii. Administrative work related to up-gradation of research scholars – from JRF to SRF
- viii. Publication of advertisement for IPhD and PhD admissions.
- ix. Issuing ‘Academic No Objection Certificate’ to students and ‘Migration Certificate’.
- x. Keeping track of semester-wise student-intake, sources of scholarship for Bachelor of Science and Master of Science (BS-MS), Integrated-PhD and PhD students, and helping the office of Dean of Students’ Affairs with information about passed out students.

### 1.2 Admission:

- i. For the BS-MS program, students are admitted in end-July or early August every year. The admission process is governed centrally by a Joint Admission Committee (JAC) which is formed by all the seven IISERs and is chaired by one IISER by rotation. Details of the admission process, criteria etc. can be found in the IISER admissions website. For SC/ST/OBC/PD candidates the seats are reserved as per Government of India rules.
- ii. For the Integrated PhD Programme, students are admitted in July every year through a written examination and / or interview conducted by the Institute. The individual departments are involved in this process.

- iii. For the PhD Programme, students are admitted twice a year, during July and December or as and when decided by a particular department. Advertisements for the same are duly announced in the Institute website.
- iv. All students admitted (provisionally or otherwise) to any academic program must submit self-attested copies of their mark-sheets, (provisional) certificates and/or other supporting documents of the qualifying examination and category certificates within 30 days from the date of admission. The Senate may cancel the admission of any student who fails to submit the required documents by the specified date. The Senate may also cancel the admission at any later stage if it is found that the student had supplied false information or suppressed relevant information while seeking admission. Further, the Institute has the right to cancel the admission of any student and ask him/her to leave the Institute at any stage of his/her career on grounds of unsatisfactory academic performance, irregular attendance in classes or indiscipline.

### **1.3 Registration:**

#### **1.3.1** Registration of students for all semesters is centrally organized by the Academic Cell.

- i. Every student is required to initiate the registration process through the pre-registration online portal after paying the requisite fees through online transaction, before a semester begins. Dates for this process are announced in the Academic Calendar.
- ii. Every student is required to be present and to complete the registration before the commencement of each semester on the day fixed for and notified in the Academic Calendar.
- iii. Under exceptional circumstances a student may take prior permission from the DoAA for late registration. This late registration will have to be within one week of the announced day of registration. A late fee of Rs 1,000 (Rupees one thousand only) will be charged in these cases. Late registration is allowed only in special cases. Requests for registration beyond the stipulated time will not be entertained. Allowance of any candidate not appearing for registration within the stipulated time will be done only through the recommendation of the Academic Senate.
- iv. Only those students will be permitted to register who have cleared all Institute and Hostel dues of the previous semester(s); have paid all required prescribed fees for the current semester, and have not been debarred from registering for a specified period on disciplinary or any other ground.

#### **1.3.2 Cancellation of Registration:**

Registration of a student from all the courses will be cancelled automatically, if he/she remains absent for a period of four weeks at a stretch during a semester without intimation to DoAA. Information regarding the same has to be sent to the Academic Cell by the concerned instructor. However, a student can always appeal to the Chairman, Senate for reconsideration.

### 1.3.3 Withdrawal from the Institute:

In case a new registrant decides to withdraw from the Institute, a refund of fees will be calculated as per the following guidelines:

- i. If a candidate pays the fees, but does not appear for registration, a processing fees of Rs. 3000.00 (Rupees three thousand only) will be deducted.
- ii. If the registration is complete and the student withdraws within one month of commencement of classes, Rs. 8000.00 (Rupees eight thousand only) will be deducted.
- iii. In case of withdrawal after one month of commencement of classes but before the mid-semester examination, 50% of the fees will be deducted.
- iv. No money will be refunded if one withdraws after the start of the mid-semester examination.

These rules are mentioned in the bye-laws to be signed by the students.

### 1.4 Academic Programs:

Presently the Institute has four academic programs (i) 5 Year BS-MS Dual Degree Program (Annexure-1) (ii) Integrated PhD Program (Annexure-2), (iii) MS in Space Physics Program (Annexure-3) and (iv) PhD Program (Annexure-4).

**1.5 Academic Session:** The academic session is divided into two semesters: an Autumn Semester (August-December) and a Spring Semester (January-May).

**1.6 Academic calendar:** The approved schedule of academic activities for a session, inclusive of dates for registration, mid-semester and end-semester examinations, inter-semester breaks, etc., shall be laid down in the Academic Calendar for each session. The Academic Calendar is prepared by the Academic Cell which is formally announced after approval by the Senate.

**1.7 Time table:** Time Table for a given semester will be finalized before the end-semester examination of the previous semester, to avoid last-minute changes.

**1.8 Courses and evaluation:** The syllabus, text books and reference books to be followed for each course are mentioned in the webpage related to that course. The division of marks normally is

Mid-semester examination: 20

End-semester examination: 50

Internal assessment: 30

In case a teacher changes the above evaluation scheme, it has to be announced at the beginning of a session. The teacher should also announce the division of marks in various components of internal assessment.

**1.9 Tutorial classes:** Problem solving is an important component of most courses and tutorial classes provide scope for adequate practice. Thus, the tutorial classes associated with a course are meant for problem solving, where the faculty tutors and teaching assistants help the students. The person-to-person interaction in smaller groups greatly benefits the students in clearing doubts and difficulties. Presence of all students in tutorials is mandatory.

**1.10 Teaching Assistants:** For every 30 students, 1 TA will be assigned. The TAs are chosen from a pool of PhD students and eligible 5th year BS-MS students. The teaching assistants should attend the relevant theory classes which will help them in conducting the tutorials effectively. Appropriate remuneration will be given to the Teaching Assistants.

**1.11 Attendance:** Attendance in all classes (lectures, tutorials, laboratories) is compulsory.

- i. A student will be debarred from appearing in examination of a particular subject if his/her attendance is less than 70% in that subject. At any point of time, if a student's attendance goes below 70%, the concerned instructor should report it to the Academic Cell. The Dean of Students should also be intimated, who will ensure that the student is appropriately counselled at the Mind-Care and Wellness Centre.
- ii. Teachers should notify the Academic Cell if any student fails to appear in classes for a span of one week. A student who has remained absent from a course for more than a week without prior approval will be issued a warning by the Academic Cell, and two such incidents could lead to his/her termination from the academic program.
- iii. A biometric attendance system is introduced from Academic Session 2018-19, for 1st and 2nd year classes of the BS-MS Programme. All courses with student number exceeding 50 will be brought under the biometric attendance system in stages.

**1.12 Leave:**

**1.12.1** In order to avail leave, an application should be submitted to the DoAA through a form available at the Academic Cell. For PhD students and 5<sup>th</sup> year BS-MS students, the leave must be recommended by the supervisor. Upon approval of the leave, the Academic Cell will inform the concerned instructors and the Warden of the corresponding hostel. The office of DoAA will keep the record of leave for each student. A prior approval from the DOAA will be required for any extension of the leave period.

**1.12.2 Medical leave:**

- i. If a student falls sick during a semester, he/she must see the Institute doctor and get the recommendation of the doctor recorded in the medical book. Official leave is granted on that basis.
- ii. In case of mental illness, the rule is the same as above. One has to see the Counselor in the MCWC and get the recommendation of the Counselor recorded. Leave is granted on that basis.
- iii. In case a student falls physically or mentally sick during a vacation, he/she may be treated by an outside doctor. But the student has to see the Institute doctor as soon as he/she returns to the campus, and has to get ailment and course of treatment recorded in the medical book. Subsequent course of action will depend on the recommendation of the Institute doctor.
- iv. It is to be noted that leave is not granted on the basis of the prescription of a doctor who is not associated with the Institute.

### 1.13 Examination:

**1.13.1** The mid-semester examination will be of 1 hour duration and the end-semester examination will be of 3 hours duration. In addition, teachers may conduct class tests, quizzes, and may give assignments for evaluation of the internal assessment component.

- i. The Instructor(s) of a course will be the paper-setter(s) and examiner(s) for the course. In case of multiple Instructors for a course, the HoD (or HoDs for courses offered by multiple departments) will designate a principal examiner and will communicate the information to the Academic Cell. The principal examiner will have the responsibility of getting the question paper set in consultation with other instructor(s) of the course, communicating with them at all stages and finally submitting the grade.
- ii. Examinations will be conducted by the concerned (principal) Instructor as per the examination time table announced by the Academic Cell. The Academic Cell will be responsible for providing attendance sheet, blank answer-scripts, extra-sheets and other stationery. The principal instructor will be responsible for bringing the question paper in necessary number to the examination hall, and for collecting the answer-scripts after counting and recording at the Academic Cell counter.
- iii. Two copies of the question paper will have to be signed by the instructor and deposited in the Academic Cell counter. One of these will be kept for official record and the other will be made available in the Library. The faculty member should provide the Academic Cell with a soft copy of his/her mid-semester and end-semester question paper for record.
- iv. Adequate number of faculty invigilators will be provided in the examination halls. Non-teaching staff will also be deputed in the large examination halls to assist the invigilators in distributing answer-scripts, question papers, extra sheets, threads, etc., and in ensuring that more than one student appearing in examination of a subject cannot be outside the hall at any time. Carrying out the assigned invigilation duty is mandatory and substitution of faculty invigilators by PhD students is not permitted.
- v. Evaluated answer-scripts of mid-semester exams will be shown to the students within 15 days after the examination, and of end-semester examination before submission of grades.
- vi. Class tests, assignments, tutorials, viva voce, laboratory assignments, projects, etc. are important components of continuous assessment process, and a student must fulfil all these requirements as prescribed by the Instructor. Appearing in the end-semester examinations in every course is compulsory. If one does not appear for the end-semester examination, his/her result will be incomplete (reflected as 'I' grade).
- vii. Laboratory examinations should be completed before the start of the end-semester examination. The dates will be mentioned in the Academic Calendar.

### 1.13.2 Supplementary and Make-up Examinations

- i. If a student fails in an examination, he/she will have two more opportunities of clearing the backlog through supplementary examinations conducted during the summer vacation of two consecutive years (not appearing in supplementary examination will also be considered as losing one chance of clearing the course).

- ii. Students with any backlog will have to stay back on campus during the summer vacation (i.e., they should not undertake summer internship). They should take help from the teachers, use the library, and prepare for the examination. Whenever possible, the departments will also offer remedial courses (where there are more than 10 failure cases in a course) to enable these students to learn the subject.
- iii. The supplementary examinations will be conducted in the second half of the month of June, in a window to be announced by the DoAA. Under special circumstances (e.g., the instructor is outside the country during this period), the DoAA may give permission to conduct the exam as per the instructor's convenience within the period of the summer vacation.
- iv. The students should be graded on the basis of the marks obtained out of 100. The marks obtained in the mid-sem exam and internal assessment may or may not be considered while awarding the grade (it is the prerogative of the instructor). Students will be given a grade one step lower than the obtained grade in the supplementary exam. However, if one obtains a D grade, it will not be lowered to F.
- v. Make-up examinations will be conducted, either separately or along with the supplementary examinations, for students who could not appear in the end-semester examination due to serious medical reasons (like hospitalization). Their grades will not be downgraded.

### **1.13.3 Completion of semester evaluation:**

- i. Grading should be done within 5 working days from the date of respective examination. However, for courses having more than 100 students, grades may be submitted within 7 working days.
- ii. After the grades are submitted, if any error in marking/grading is detected, the Instructor may request the grade change in writing to the DoAA with proper justification within 7 days of submission of the grades. Any proposal for change of grade beyond that period will have to be approved by the Chairman, Senate. A specific Grade Change form is to be used for this purpose which will be available from the Academic Cell.

### **1.14 Grading System:**

**1.14.1** As a measure of students' performance, a 10-point grading system using the letter grades and corresponding grade points is adopted.

- i. By default the following range of marks are related to the grades: A+: 91-100, A: 81-90, B+: 71-80, B: 61-70, C: 51-60, D: 41-50, F: <40. The instructor may change these ranges in the We Learn system to obtain an even distribution of grades. In that sense, the grading system is relative in nature.
- ii. In case a student does not appear in the end-semester examination due to medical reasons, 'Incomplete' (I) grade will be indicated on the grade card, to be replaced by proper grades after the make-up examination. In case a student is debarred from appearing in the end-semester examination due to poor attendance, failure ('F' grade) will appear in the transcript.

iii. The grades obtained are related to the following ‘Grade Points’:

Grades	GP
A+	10
A	9
B+	8
B	7
C	6
D	5
F	0

A Semester Grade Point Average (SGPA) will be computed for each semester by the formula

$$SGPA = \frac{\sum_i C_i G_i}{\sum C_i}$$

where  $C_i$  is the credit for the ‘i’th course and  $G_i$  is the grade point for the same course. The sum runs over all the courses the student is required to take for the semester. The SGPA will be rounded off to the second decimal place. This SGPA reflects the student’s performance for the semester.

At the end of the S-th semester, a Cumulative Grade Point Average (CGPA) will be computed for every student as,

$$CGPA = \frac{\sum_{i=1}^m C_i G_i}{\sum_{i=1}^m C_i}$$

where  $m$  is the total number of courses the student has registered from the first semester onward up to and including the semester S,  $C_i$  is the number of Credits allotted to a particular course and  $G_i$  is the grade-point corresponding to the letter grade awarded to the student for the course. The CGPA will be rounded off to the second place of decimal. The CGPA would indicate the cumulative performance of the student from the first semester up to the end of the semester which it refers to. The CGPA, the SGPA and the grades obtained in all the subjects in a semester will be communicated to the students after the end of every semester (provided he/she has submitted all the course feedbacks).

- iv. When a student gets the grade ‘I’ for any subject(s) during a semester, the SGPA of that semester and the CGPA at the end of that semester will be tentatively calculated ignoring these subjects. After the ‘I’ grades have been converted to appropriate grades, the SGPA and the CGPA for that semester will finally be recalculated after taking into account these grades.
- v. When a student gets the grade ‘F’ in any course during a semester, the ‘F’ grade will be appropriately replaced by the new grades, after the student gets a new grade through a supplementary examination. In case of failure in supplementary examination, the SGPA and the CGPA will be calculated taking ‘zero point’ for each such ‘F’ grade. If the ‘F’ grades are substituted by other grades obtained in the supplementary examination, the SGPAs and the CGPA will be recalculated on the basis of acquired grades.



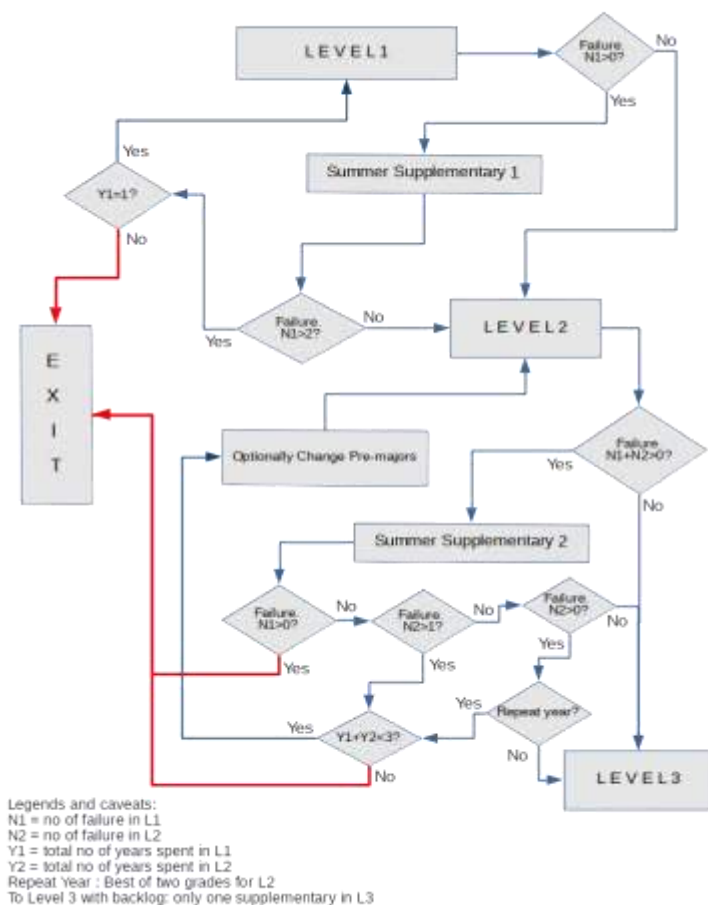
**1.14.2 Grading Audit courses:** Students will be allowed to take Audit course/s if Time-Table permits. The course/s will be graded similar to the Credit courses and a separate grade card will be provided for the same. However, this grade will not be considered for SGPA/CGPA calculation.

**1.15 Policy of Promotion of Students:**

- i. A student who has failed in any course must mandatorily appear in the supplementary examination. He/she will not be permitted to leave the campus during the summer vacation until the supplementary examinations are over. He/she should consult the teachers, use the library, prepare for the exam, and focus exclusively on clearing the backlogs. He/she should not do any summer internship.
- ii. A student will be promoted to the next level, provided he/she does not have more than two backlogs in theory courses after supplementary examinations which he/she has to clear during supplementary examination of the following summer. (Only exception is Level 2 which is mentioned vide Point 2.3.2)
- iii. If a student fails in a laboratory course, he/she will have to clear it during the subsequent summer recess. If he/she fails again, he/she will not be promoted to the next level.
- iv. If a student is detained in the 2<sup>nd</sup> level, he/she will have the option of changing the pre-major. In case there is only one backlog at the end of the 2<sup>nd</sup> level, the student may opt to be promoted (provided he/she clears the requirements of getting a major), with the undertaking that if he/she fails to clear the backlog in the subsequent summer supplementary examination, his/her studentship will be terminated.
- v. A student who repeats a year will have to register and pass all the theory courses of that level. The better of the two grades obtained in a given subject in the two years will be reflected in the transcript. However, in case of a failure, the 'F' grade will be reflected in the transcript, which will have to be cleared through the next supplementary examination. The student is not allowed to register for the laboratory courses in which he/she had already passed.
- vi. In case a student gets poor grades in a year, he/she may voluntarily choose to repeat a year to improve the CGPA. In that case the above rules for year repeat will apply and he can do it only once in the whole duration of the programme.
- vii. A student will have a maximum of three opportunities of passing a course (the regular end-semester examination and two supplementary examinations). In case of failure in three attempts, his/her studentship will be terminated.
- viii. In case of failure in an elective course after first supplementary exam, the student will have an option of choosing a different elective in the next semester (provided there is no time table clash). He/she will have to clear it in two attempts, failing which he/she will be terminated from the programme.
- ix. If a student gets promoted with some backlog course, and the syllabus is changed in between, he/she will appear for the examination in the old syllabus. The Instructor who had taught the course (in which he/she has failed) should be the examiner for the course. If the same Instructor is not available, the Head of the concerned Department will assign an alternate examiner.

- x. A student will have to clear all courses before being awarded the final degree from the Institute.

### Flow Chart for L1 and L2 promotion



**1.16 Academic Feedback:** The Institute strives to improve knowledge delivery continuously, and periodically reviews and updates the curriculum. Students’ feedback on the courses and instructors is invaluable in that process. It is mandatory for students to submit academic feedback. Semester results will be withheld for those who do not submit course feedbacks.

### 1.17 Academic Warning and Academic Probation

“Academic warning” is given to a student at the end of a semester if he/she earns an SGPA less than 5.0 for that semester. If the student receives an SGPA below 5.0 in the next semester also, he/she will be placed on “academic probation” for the following semester. If the student continues to earn SGPA less than 5.0 consecutively in the 3rd semester, he/she will have to quit the Program. This rule is applicable for students admitted in 2015 onward.

“Academic warning” is an indication that the student’s performance has fallen below the Institute’s requirement for “good academic standing”. Students who receive an academic warning are encouraged to develop a plan for academic improvement. For them, seeing the Counsellors at the MCWC is mandatory.

### 1.18 Counselling for students performing below expectations:

A 'Mind-care and Wellness Centre' (MCWC) under the supervision of the DoSA will look after the needs of the students who are not performing up to expectations. After the mid-semester examination, each faculty member should provide the names of the students who have not performed well in the examination and/or students who have a poor record of attendance. The Academic Cell will intimate the names of such students to the DoSA for initiation of appropriate counselling. The MCWC should inform the guardian about the shortcomings of the student. When a student remains absent from a class for a longer period (more than a week), the Instructor-in-charge should send the name(s) of the student(s) to the Academic Cell which may forward these names to the Counselling cell for further action.

### 1.19 Termination of studentship:

**1.19.1** The following situations will lead to termination of studentship.

- i. A student fails in any course even after three attempts.
- ii. A student fails to meet the criteria of being promoted to the next level after spending two years in a certain level.
- iii. A student fails to clear the 1<sup>st</sup> and 2<sup>nd</sup> level courses in 3 years and has more than one backlog.
- iv. A student fails to complete the requirements of the BS-MS degree in 7 years.
- v. A student earns SGPA less than 5.0 after three consecutive semesters.

**1.19.2** A student can appeal against a termination notice to the Chairperson, Senate.

**1.20 MS to PhD Switch over:** A student can apply for switch-over from BS-MS to PhD program of the Institute any time after the commencement of 5th year of the program. Students of the MS in Space Physics Programme will also have the option for switch-over.

- i. The student must have CGPA of 7.5 or more at the time of switch over, and must maintain a CGPA above 7.5 until the end of the 5th year. In case the CGPA of the student falls below 7.5, his/her candidature as a PhD student will be cancelled.
- ii. Before registering for the PhD programme, the student must (a) pass a comprehensive viva voce conducted by the Department, and (b) qualify in one of the national level exams. He/she is encouraged to bring his/her own fellowship from external funding agencies like CSIR, UGC, INSPIRE.
- iii. If a student is selected for the switch over program and maintains his/her CGPA of 7.5 or more, he/she will be entitled to get a scholarship of Rs 10,000.00 (Rupees ten thousand only) during his/her 5th year, half of which will be paid as an arrear in favour of the student at the end of the 5th year. Unless the student secures funding from some external agency, he/she will be considered as an Institute Fellow following induction into the PhD programme.
- iv. For these students coursework will be waived.

### 1.21 Institute Academic Committee:

The Committee will be appointed by the Director comprising of two sub-committees – the Undergraduate Academic Committee (UGAC) and the Postgraduate Academic Committee (PGAC). The Secretary will be the Assistant Registrar (Academic) and DoAA will be the ex-officio Chairperson. Each Department/Centre will nominate one member for each of the sub-committees. The DoAA will choose the chairpersons of each of the two sub-committees, who will directly assist the Dean in running the Academic Cell. The tenure of the nominated members of the Academic Committee will be for one year.

Each department will have an UGAC and a PGAC comprising 4-5 members, headed by a ‘Convenor’. The conveners of the departmental UGACs and PGACs will be the members of the Institute-level UGAC and PGAC.

#### 1.21.1 Functions of the Departmental UGAC:

- i. To review the curricula periodically and to suggest revisions
- ii. To propose introduction of new courses for approval by the Senate
- iii. To advise students in choosing the elective courses wisely
- iv. To monitor the performance of students, to identify students who need help, and to liaise with MCWC to ensure proper counselling
- v. To assign project supervisors to each 5<sup>th</sup> year students and to conduct the evaluation process through project seminars

#### 1.21.2 Functions of the Institute-level UGAC:

- i. To propose all policy matters related to undergraduate education and to place for approval of the Senate.
- ii. To monitor the implementation of the policies decided by the Senate.

#### 1.21.3 Functions of the Departmental PGAC:

- i. To formulate the content of advertisements for admission
- ii. To form interview boards
- iii. To forward progress reports of students to the Academic Cell
- iv. To schedule and conduct comprehensive examination,
- v. To be involved in the process pertaining to thesis, from initiation to completion
- vi. To decide on the number of PhD students that can be taken by a department
- vii. To conduct orientation for new students

#### 1.21.4 Functions of the Institute-level PGAC:

- i. To propose all policy matters related to postgraduate education and to place for approval of the Senate.
- ii. To monitor the implementation of the policies decided by the Senate.

**1.22 Storage of old answer-scripts:** As per *Record Retention Schedule In Respect Of Records Common to All Ministries/ Departments* (2012), Government of India, vide Sl. No. 6 of “Records Other Than Files” (Page 19), the retention period for “Answer books of departmental examinations/tests” is “C-1 from the date of declaration of results”, where C-1 denotes “Category C files to be kept for 1 year”. Accordingly all answer-scripts will be maintained for one year and then will be destroyed. No request for viewing the answer-script will be entertained after this period.

**1.23 National Academic Depository:** The National Academic Depository (NAD) is an initiative of MHRD, Government of India wherein academic institutions can securely lodge details of all academic certificates issued to students. IISER Kolkata has signed a Memorandum of Understanding (MoU) with NSDL, Mumbai – one of the designated platforms to address various issues such as storage, authenticity and verifiability associated with the use of academic awards. As part of this MoU, IISER Kolkata is able to securely lodge details of all academic certificates issued to students.

- i. Students need to register with National Academic Depository (NAD) through the link <https://www.nad.ndml.in/NAD/newStudentRegistrationScreen.html>". This is mandatory to get their final degrees. A screenshot of the step-by-step process for NAD registration is available on the intranet.
- ii. Students can register with Aadhar Number (preferable). In this case it has to be ensured that their phone number and e-mail are updated in their Aadhar cards for receiving communications from NAD.
- iii. In case a student does not have Aadhar, he/she has to register to get a NAD ID. NAD ID registration would require online confirmation from the Institute; hence the student must intimate the Academic Cell if he/she exercises this option. The form for the same is available on the intranet.

#### **1.24 No Dues**

- i. Students will get all the clearances from one point: the Academic Cell.
- ii. In order to initiate the process of No Dues, a student will have to submit an application to the Academic Cell for release. The Academic Cell will then get clearances from all sections, except from the department(s) as applicable to the concerned student.
- iii. Graduating students should ensure that there is nothing outstanding against him/her well in advance before the submission of thesis. This is mandatory for issuance of degree certificate/release order.

## 2. 5 Year BS-MS Dual Degree Program

**2.1 Introduction:** IISER Kolkata offers a Bachelor and Masters (BS-MS) Dual Degree Program wherein a unique training programme is offered to students through a balanced schedule of class room lessons, project and research works. While the Institute aims to comprehensively train the students in each of the major subjects, much attention is also directed to the development of the inter-disciplinary skills.

**2.2 Credit structure:** The number of credits will be approximately the same as the number of contact hours per week. The 4-credit courses will include three hours of teaching and 1 hour of tutorial (or an equivalent length of time devoted to term paper, assignments, etc.).

Levels	Credit Distribution		
	Autumn	Spring	Total Credits
First	29	29	58
Second	24	24	48
Third	24	24	48
Fourth	24	24	48
Fifth	24	24	48
Total Credits after Fifth Year			250

### 2.3 Levels

#### 2.3.1 Level 1:

The first level of the 5 Year BS-MS Dual Degree Program will have 29 credits in each semester in the following courses:

- i. Courses in five disciplines of basic sciences viz., Biology, Chemistry, Earth Science, Mathematics & Statistics, and Physics
- ii. Courses on Computational Sciences, Communicative English, and Sociology: The first year students will be divided into two batches depending upon their level of exposure to English. In the 1<sup>st</sup> semester Batch A will register for Communicative English while Batch B will learn Sociology. In the second semester, Batch A will learn Sociology while Batch B will learn Communicative English.
- iii. CNR Rao Foundation Prize: The prize is given to the Best Student of the first year. A certificate and cash prize is given twice in a year to the student scoring the highest CGPA in the semester.

#### 2.3.2 Level 2:

In the second level, a student has to complete 24 credits in each semester. Here a student must choose three pre-major disciplines from among the five disciplines mentioned above, each offering courses totalling 8 credits.

**2.3.3 Level 3:**

- i. In the third level, students are required to choose a 'Major' discipline from the three pre-major disciplines chosen in the second level.
- ii. Each Department will specify the maximum number of students they can accommodate in a particular academic year, by taking into account the laboratory facilities and faculty strength. However, this number cannot be less than 25% of the total number of students enrolled in the second year of that particular year.
- iii. Each department may set pre-conditions of allowing a student to take that major discipline, and the allotment will be subject to meeting these pre-conditions. For choosing the major, a student must clear all the relevant pre-requisite courses in the previous four semesters.
- iv. If the student is unable to qualify for any Major after the second year owing to multiple failures or does not qualify for the major of his/her choice, he/she will be detained in the second year. In that case conditions of detainment (refer to "Promotion Policy" vide Point 1.15) will be applied.
- v. In order to get major in any discipline, a student must have cleared all courses offered by that department in the first and second levels.
- vi. A student can change his/her Major within a week from the start of the 5<sup>th</sup> semester.
- vii. Students will have to take five core courses from the selected discipline (major). In addition, one course is to be chosen as elective and which must be a theory course. The elective course may be chosen from the same department or from another department that the student chose as pre-major in the 2<sup>nd</sup> level. A student cannot take a laboratory course as elective (excepting computer lab, which is equivalent to a theory course). Students should seek the advice of the department UGAC members in choosing the electives.

**2.3.4 Level 4:**

In the fourth year, core and elective courses are offered, and the guidelines for choosing elective courses remain the same as in the 3<sup>rd</sup> level. A student must credit all the core courses being offered in his/her major subject.

**2.3.5 Level 5:**

In the fifth year, a student has to do a dissertation (research project) along with some advanced courses. Students willing to do the 5<sup>th</sup> year project work in any Department other than his/her parent Department, must have a project supervisor from his/her own Department along with a co-supervisor from the other Department.

**2.3.6 Earning a Minor:** In third and fourth levels students may select elective courses from any department. If a student chooses to take most of the elective courses from one of his/her pre-major disciplines and earns a minimum of 40 credits (including the 1st and 2nd level courses), then it will be assumed that he/she has acquired minor expertise in that discipline. Then he/she will earn a 'Minor' in that discipline and it will be mentioned in his/her Degree Certificate.



**2.4 MS thesis outside the Institute:**

- i. A student may be allowed to do the final year project outside the Institute provided the coursework is not hampered, and a supervisor from IISER-K is allotted. In case supervisor is not from IISER-K, the Co-Supervisor from IISER-K will be accountable for ensuring completion of academic requirements of a student as per IISER-K rules.
- ii. In case a student wishes to do a part of the project work in another Institute in India or abroad, he/she should submit expression of interest in the field of proposed research, offer letter from the host Institute and/or MoU (in case of foreign universities) and financial statement, on the basis of which the concerned UGAC Convener and Department will forward the request to DoAA.
- iii. A student must give a presentation upon his/her return and submit a report to DoAA, duly forwarded by the concerned supervisor, UGAC Convener and HoD.
- iv. If a student is required to do some coursework in a semester in addition to the project, that course can be done as an “independent study” course with special permission from the DoAA (provided there is no other 'Independent Study’ course to be taken that semester). The student will have to appear in the end-semester examination and will be evaluated on the basis of that examination alone.
- v. The MS thesis should be submitted to the Academic Cell in linkable electronic version only.

**2.5 Independent Study:**

A student may choose a course for ‘Independent Study’ which is not offered by the Institute as a taught course. One cannot do this course in the same area in which he/she is doing the final year project.

**2.6 Continuation of Fellowship:**

- i. The fellowship rules are governed by the respective funding sources like INSPIRE or KVPY. At the end of every semester, the Academic Cell will communicate the students’ results to the funding agencies, and the decision to continue / discontinue fellowships entirely lie with them. IISER Kolkata has no say in this matter.
- ii. Students are also intimated by the Academic Cell on scholarships available during the Academic year on the National Scholarship portal and JKPMSS. Students can submit applications on the portal to respective funding agency based on eligibility criteria. The verification of applications is done by the Academic Cell.

**2.7 Protocol for choice of supervisor for MS project and selection of best MS thesis****2.7.1 Choice of supervisor for MS project**

- i. The UGAC convener of a particular department will contact all the 5th year BS-MS students asking for their preferred MS project supervisor. The students will send names of three faculty members according to preference
- ii. On receipt of all the preferences, the UGAC convener of the department and HoD will consider the first preference of a particular student and HoD will contact the respective faculty member to take his/her opinion. If the faculty member agrees to take him/her, then that student will be assigned to that faculty. If the faculty member does not want to take the student, then the student’s second preference is explored and so on.
- iii. Each faculty member must take at least one 5th year project student in his/her group. Depending on the number of students in a department, HoD will decide the maximum number of students a faculty member can take in a particular year.



**2.7.2 Choosing the best MS thesis:**

- i. Each department will make a few committees comprising faculty members with different expertise, headed by a convener. The total number of BS-MS students will be equally divided in groups to present their work in front of those committees one at a time. Each committee will suggest three names that will compete for the best thesis award.
- ii. An apex committee comprising the Convenors of each committee, the members of the departmental UGAC and external experts chosen by the UGAC will finally select two students.
- iii. There will be an award for the best thesis and another for the second best thesis from each department.

**2.8 Final year thesis:**

**2.8.1** Two copies of hard bound MS thesis should be submitted - one directly to the concerned department office and one to the Library (through the Academic Cell).

A linkable electronic version of the MS thesis should be submitted to the Academic Cell.

**2.8.2** The thesis must be passed through ‘Turnitin’ for plagiarism check and the student must ensure that, apart from quotations, no part of the thesis is copied from any published material other than the student’s own papers.

**2.8.3 Format:**

- i. Font type and Size: Times New Roman, 12 Pts.
- ii. Line Spacing: 1.5
- iii. The front page should have the following information with centre alignment:
  - (a) Title of the Thesis
  - (b) Name of the degree
  - (c) Name of the student
  - (d) Roll No. of the student
  - (e) Name of the Supervisor
  - (f) Name of the Co-Supervisor if any
  - (g) Name of the Department
  - (h) Name of the Institute with its Logo
  - (i) Month, Year
- iv. Declaration of the student with his/her signature on academic integrity and copyright. (For template please refer to 5.22.4)
- v. Certificate of the Supervisor with his signature. (For template please refer to 5.22.5)
- vi. Acknowledgement (not more than two pages)
- vii. Dedication (optional)
- viii. Abstract
- ix. Chapters, starting with ‘Introduction’ and ending with ‘Conclusion’
- x. References
- xi. The CD label should have the following information:
  - (a) Name and Roll No. of the student
  - (b) Title of the Thesis
  - (c) Month, Year

### 3. MS in Space Physics Program

**3.1 Introduction:** The Center of Excellence in Space Sciences India (CESSI) is a Center of Excellence (CoE) funded by the Ministry of Human Resource Development under the Frontier Areas of Science and Technology Scheme (FAST) programme of the Government of India. These CoEs are expected to offer post-graduate and doctoral programmes that combine a unique blend of basic sciences and engineering sciences allowing integration of fundamental knowledge while developing proficiency in research. In keeping with this mandate and to support fundamental and applied national research in space sciences CESSI runs an MS program to attract qualified and motivated engineering (BE/BTech) students to scientific research.

#### 3.2 Selection Process:

Based on the evaluation of applications following an admission call, some candidates are short-listed and called for interview. Recommendation letters may be sought for short-listed candidates. Final selection is based on the performance in the interview, academic background of the candidate and any other criterion determined by the selection committee. No candidate may be selected if suitable candidates of sufficient quality are not found.

#### 3.3 Details:

- i. Name of Program: MS in Space Physics
- ii. Duration: 2 years (4 semesters)
- iii. Eligibility: BE/BTech Graduates (satisfying declared eligibility criteria in the admission call)
- iv. Total Credit: 78
- v. Fellowship: As per Government norms

#### 3.4 List of Courses and Semester Structure:

##### 3.4.1 Semester I (21 Credits)

- i. Introductory Astrophysics (Core): 4 Credits
- ii. Computational Physics (Core): 4 Credits
- iii. Elective Course I (\*): 4 Credits
- iv. MS Research Project (Core): 9 Credits

##### 3.4.2 Semester II (21 Credits)

1. Space Astronomy (Core): 4 Credits
2. Fluid- and Magneto-Hydrodynamics OR General Theory of Relativity and Cosmology (Core-Elective): 4 Credits
3. Elective Course II (\*): 4 Credits
4. MS Research Project (Core): 9 Credits

### **3.4.3 Semester III (18 Credits)**

MS Research Project (Core): 18 Credits

### **3.4.4 Semester IV (18 Credits)**

MS Research Project (Core): 18 Credits

\* These are additional elective courses that may be chosen from the courses on offer from the Department of Physical Sciences based on recommendation by the Supervisor of the MS Research Project.

Note: Candidates will have to clear any failed courses in the supplementary examination to be eligible for award of the MS degree. Fellowship is contingent upon maintenance of a CGPA of 6.0 or above and no backlog.

### **3.5 Promotion Policy:**

Please refer to BS-MS promotion policy vide Point 1.15

### **3.6 Termination of studentship:**

Please refer to BS-MS promotion/termination policy vide Point 1.15.

### **3.7 Thesis Submission:**

- i. A student of this program will be associated with the Department of Physical Sciences of IISER-K.
- ii. The departmental PGAC will also administer the MS in Space Physics Program and will monitor the progress of each student. A student of this Programme will be associated with a specific faculty member or a research group, as recommended by the PGAC.
- iii. At the end of two years, a dissertation will have to be submitted by the student. The dissertation will be evaluated by the supervisor of the student and two examiners (one of them from outside the IISER-K). If the dissertation is found acceptable, the candidate will have to defend it through a seminar, conducted before a committee of examiners as well as other interested listeners.
- iv. The format of the MS thesis will be the same as prescribed for the BS-MS students.

## 4. Integrated PhD Program

### 4.1 Introduction:

The Integrated Doctor of Philosophy (IPhD) program in IISER Kolkata is its flagship PhD program aimed at attracting talented and innovative undergraduates to research in basic sciences, and to motivate them to begin cutting-edge research at an early stage of their higher studies. This is a PhD program in which outstanding undergraduates are drafted early, right after they finish their Bachelor's program, and then are trained through a rigorous and specialized coursework before they start research in the frontiers of science.

Students are admitted through a department-level selection procedure comprising initial shortlisting on the basis of academic scores, a written test, and an interview.

Admission to the IPhD program is conducted across five departments - Biological Sciences, Chemical Sciences, Earth Sciences, Mathematics & Statistics, and Physical Sciences. The eligibility criteria for application to this program are uploaded in the Application Portal of the Institute website around March-April every year.

The following are the guidelines pertaining to this program.

### 4.2 Credit Structure:

Total credits for Integrated PhD (IPhD) are 112 and is spread over three years. The credits are assigned to a coursework comprising regular courses and a project. The credits may vary from 2 to 4 among different regular courses, and will be decided by the individual departments. The actual distribution of credits over different semesters is given below.

Name of the Department	First level	Second Level	Third level
Biological Sciences	28+28	20+20	8+8
Chemical Sciences	24+24	24+24	8+8
Earth Sciences	24+24	20+20	12+12
Mathematics and Statistics	20+16	24+24	16+12
Physical Sciences	24+24	20+20	12+12

### 4.3 Integrated PhD (IPhD) Project:

In the IPhD Project the student should ideally commence the research work leading to the PhD degree.

The distribution of the IPhD Project over the duration of the program can be different for different departments. There is credit assigned to the project work in each semester in this period, and evaluation is done on the basis of a presentation and a report. A project report has to be submitted in each of the project semesters, containing a literature survey, problem statement, and a detailed account of the research results. The student will have to make a presentation before the Research Progress Committee.

#### 4.4 Comprehensive Examination:

A comprehensive examination is defined as a means to evaluate a student's comprehensive understanding of his/her discipline, ability to pose scientific questions and grasp of the methodology of doing research. The examination will test whether the student has sufficient preparation to continue research as a PhD student.

- i. It will be scheduled within one month of the last date of the 4<sup>th</sup> semester, i.e., in the month of June. If a student passes the Comprehensive, he/she will be considered as a Junior Research Fellow from the beginning of the next semester (Autumn Semester). If a student fails, he/she will be given a second chance by mid-July of the same year.
- ii. Comprehensive examination will be conducted by the departmental PGAC upon recommendation of the concerned UGAC that a student has successfully completed two years' course work at MS level. In addition to the mandatory viva voce, a department may choose other means of evaluation, like written test.
- iii. Collection of grades of the IPhD students and updating the same in *WeLearn* will continue to be under the purview of the UGAC until the coursework is finished, irrespective of their comprehensive results.
- iv. After a student successfully clears the comprehensive examination, a Research Progress Committee will be assigned to him/her. The Committee will evaluate the student at the end of each semester's MS project (during the 3<sup>rd</sup> year), and will continue to evaluate the progress thereafter.
- v. If the student is unable to clear the comprehensive examination, the evaluation of the MS project (formation of a three member committee etc) would be conducted by the departmental UGAC in consultation with the respective supervisor.
- vi. In case a student appearing for his/her Comprehensive Examination has other academic obligations, the academic and degree requirements of the Institute and the program should prevail over all other assignments.

#### 4.5 Supervisor:

In the semester in which the IPhD Project starts, the department PGAC committee will assign each student to a research supervisor, taking into account the following factors:

- i. The student's choice of supervisor, research interests and performance in the course work and consent of the faculty member concerned
- ii. A student may not change his/her IPhD Project Supervisor during the period of the Project, but may be assigned a co-supervisor, if approved by the supervisor.
- iii. The student may change his/her supervisor only once within the first month of the semester immediately after the completion of his/her IPhD Project work (generally in the month of August of the fourth year). Any further change of supervisor is not allowed.
- iv. A student may join, with permission from the Heads of both the departments, an advisor from a department other than the student's parent department for his/her IPhD Project work starting from the 3<sup>rd</sup>/4<sup>th</sup> semester. However, to continue with his/her PhD work in the other department, he/she will have to fulfil the degree requirements of the parent department (including the Comprehensive Examination and the Graduate Seminar), and he/she will have to take a minimum of two courses from the PhD coursework of the other department. In addition, he/she will be assigned a Program Advisor from his/her parent department. His/her PhD degree will be awarded from his/her parent department.

**4.6 Fellowship Structure:**

- i. The IPhD student will get the basic scholarship (currently 16,000/- per month) for the first two years (month of August in the 1st year to the month of July in the second year) provided his/her CGPA does not fall below 6.0 and/or he/she does not have any backlog. The scholarship will be restored if the CGPA goes above 6.0 in the subsequent academic year.
- ii. The student will be entitled to get the Institute JRF Scholarship (PhD scholarship) provided that he/she has passed the Comprehensive Examination. The entitlement starts from the third year (month of August in the 5th semester).
- iii. Upgradation to the SRF position and fellowship will be governed by the rules of the Institute-funded PhD program. An IPhD student will be eligible for SRF upgradation at the end of the fourth year, if it is recommended by the Research Progress Committee.
- iv. IPhD students will be entitled to get full fellowship for a total period of 7 years (2 years MS+ 5 years PhD).

**4.7 External Funding:**

- i. IPhD students are strongly encouraged to apply for external fellowships (such as CSIR, UGC, and INSIPRE). However, an IPhD student cannot activate his/her external research fellowship unless he/she qualifies the Comprehensive Examination conducted by the concerned Research Progress Committee (RPC).
- ii. If the student does not finish his/her PhD and needs to continue after his/her external fellowship gets over, the Dean of Academic Affairs may consider extending his/her fellowship from the Institute fund for one more year, based upon the student's research progress and recommendation of the concerned RPC.
- iii. If an IPhD student activates his/her external fellowship before completing the credit requirement of the IPhD program, but eventually fails to clear one or more of the required courses or the IPhD Project up to the end of his fourth year after admission, the student will have to quit the program regardless of the fate of his/her external fellowship.

**4.8 Promotion Policy:**

Please refer to BS-MS promotion policy vide Point 1.15.

**4.9 Termination of studentship:**

Please refer to BS-MS promotion/termination policy vide Point 1.15.

**4.10 PhD Thesis:**

- i. Once the student passes the Comprehensive Examination, she/he will be considered as an Institute JRF from the beginning of the third year.
- ii. Once the credit requirement (112 credits) is completed, the rest of the IPhD program will be regulated by the guidelines of the PhD program.
- iii. The PhD Thesis of an IPhD student may not be submitted and defended before the end of the fourth year after admission, and the PhD degree may not be awarded before the Convocation at the end of the fourth year.
- iv. The format of the thesis will be the same as prescribed for the PhD students.

**4.11. Master's Degree:**

- i. The IPhD program in IISER Kolkata is a PhD program, and the Institute expects the students of this program to finish their PhD in the Institute. A successful defence of the PhD thesis is qualification for the award of both Master's (MS) and PhD degrees.
- ii. However, an Integrated PhD student is eligible to receive a Master's degree (MS) from the Institute if he/she completes all 112 credits with grade D or above. The degree, nevertheless, will not be awarded unless the student quits the program and solicits the degree.
- iii. The Master's degree will be awarded only at the Convocation ceremony held in the summer every year. The student who has fulfilled or is expected to fulfil the eligibility criteria for the Master's degree during a Spring semester, and intends to receive the degree in the Convocation ceremony held in the following summer, must state his/her willingness to quit the program. A Master's degree may be awarded to such students in the following Convocation subject to the Senate's approval.
- iv. IPhD students who shall request for MS degree for an early exit from the program (post-MS), should submit their hard bound MS Project Report /MS Thesis along with a soft copy in CD (following the format mentioned in the guidelines) to Academic Cell before leaving.

**4.12 Master's Thesis:** The IPhD students, in general, will not submit a Masters' Thesis. Those who wish to discontinue the program with a Master's degree will have to submit their IPhD Project work as a Masters' Thesis, only if the IPhD Project Supervisor judges the project work to be worthwhile as a Masters' Thesis. In such a case, the student will need to apply to the Dean of Academic Affairs through a form (provided by the Academic Cell) duly signed by himself/herself, the IPhD Project advisor, and the Head of the Department. If approved by DoAA, the IPhD Project Work can be transformed to a Masters' Thesis by preparing it in the same format prescribed for MS thesis of BS-MS students, and can be submitted to the Institute within one month of such approval.

**4.13 Registration:** Registration of IPhD students will be valid for 7 years.

**4.14 Orientation:** Each department conducts an orientation for the fresh batch of IPhD students, normally within two working days of IPhD registration. During the orientation the concerned HoD welcomes the students and introduces them to the departmental UGAC Convener. The students are briefed about the course choices, department's activities and about general IPhD rules. The students have to register to the courses of the semester before the commencement of classes, avoiding time table clashes.

## 5. PhD Program

### 5.1 Introduction:

The goal of the Doctor of Philosophy (PhD) Program at IISER Kolkata is to introduce students to cutting-edge research and to stimulate their intellectual development. IISER Kolkata strives to provide world-class training to its PhD students so that they gain confidence to become an independent researcher. The Institute offers PhD Program in the following five disciplines – Biological Sciences, Chemical Sciences, Earth Sciences, Mathematics & Statistics and Physical Sciences.

### 5.2 General guideline for the award of PhD degree:

IISER Kolkata awards the degree of Doctor of Philosophy (PhD) to a student who has successfully completed the stipulated program of research.

The PhD program of research and its governing rules and regulations are formulated by the Academic Senate of the Institute. The Senate can modify or change the structure and the governing rules from time to time.

To be eligible for the PhD degree a student must submit a thesis embodying the findings of her/his research carried out under this program.

The thesis should make original contributions of high quality, contributing to the advancement of knowledge, which will be judged by the experts in the relevant area.

The award of PhD degree shall be made upon the recommendation of the Senate.

The awarded degree will be “Doctor of Philosophy” and the certificate will mention the title and year of the thesis.

### 5.3 Admission:

**5.3.1 Protocol for student intake for PhD at IISER-K** The following points may be considered while choosing candidates for PhD at IISER-K:

- DoAA will inquire from the HoDs for requirement for PhD students in the respective departments
- the required information will reach DoAA through the departmental PGAC Conveners/HoDs
- DoAA will request DoSA and Chief Warden to report on the availability of seats in hostels
- DoAA will inform about the possible quantity of intake for the PhD program to the HoDs as approved by the Director

### 5.3.2 Channels of Admission

#### i. Regular Channel:

Selection to the PhD program is made twice a year - between May and July (for the Autumn Semester beginning in August) and between November and December (for the Spring Semester beginning in January). The PhD admission process is coordinated by the Post Graduate Academic Committee (PGAC) comprising of one faculty member from each department of IISER Kolkata with the support of the Academic Cell and the IT Cell.



Advertisements are issued in the Institute website in March/April for the Autumn Semester and in August/September for the Spring Semester. Applications are accepted online through an application portal and all relevant information, including the selection list is published in the Institute website on pre-defined dates.

Interviews are conducted by interview boards duly constituted by the respective departments in May/June for the Autumn Semester and in October/November for the Spring Semester.

The PGAC would provide all documents pertaining to the PhD admission to the Academic Cell for future records and reference.

**ii. Admissions in between two semesters:**

Interviews for admission to regular PhD Programme can be conducted by Departments several times in a year, but only through proper advertisement and not on an ad-hoc basis. Students selected through the above process may be exempted from another round of interview during the regular PhD admissions but will have to formally register in the subsequent semester.

**iii. PhD students joining from other Institutes:**

If a student of another Institute/University wants to move to IISER Kolkata, he/she has to qualify through the regular admission process. Transfer of fellowship will be the responsibility of the candidate, the supervisor and the PGAC. Institute will support such students with fellowships for a maximum period of three months or until his/her fellowship gets transferred (whichever is earlier). The student will have to do all regular course-work, appear for the Comprehensive Examination and the Graduate Seminar, and, therefore, fulfil all the requirements of the PhD degree in the Institute of a regular applicant. In principle, this will be a fresh PhD admission, albeit of a shorter duration depending on the availability of the external fellowship.

**iv. Students working in sponsored projects:**

Students working in sponsored projects in the Institute (as project JRF or equivalent position) are not entitled to join the PhD Program automatically. They may apply for a PhD position through the regular channel mentioned above. If selected, their designation will be changed to regular PhD student.

**vi. Students of newly joining faculty members from other universities / institutes:**

If a faculty member of another Institute joins IISER-K, his/her existing students may be admitted as per the following rules.

- (a) If a student had joined the faculty member within the past three months, the student will have to give fresh interview at IISER-K.
- (b) A relatively older student (who joined the lab in more than four months ago) will present his/her work at IISER-K in front of a committee comprising the PGAC and the Head of the department where the faculty member has joined. This committee will interview the student before admission.
- (c) The committee will also review the coursework already done by the student in the previous Institute. In case of dissatisfaction, the Committee will recommend fresh course work at IISER-K.

### 5.3.3 Minimum Eligibility Criteria

- i. For students with own fellowship: Students with independent PhD fellowship from external funding agencies (e.g. CSIR, UGC, DBT, ICMR, INSPIRE, NBHM, etc.) and having a minimum of 55% marks in their Master's degree are eligible to apply for the IISER Kolkata PhD Program.
- ii. For students without any fellowship: The areas in which Institute-funded PhD students will be taken will be announced in the PhD advertisement. An applicant must have qualified at least one national level exam (e.g. GATE, JGEEBILS, JEST etc.) and must have a minimum of 55% marks in the Master's degree.
- iii. The minimum eligibility criteria mentioned above may change time to time upon recommendation by the Senate.
- iv. Fulfilling the minimum eligibility criteria does not ensure that a candidate will be called for the interview. Additional criteria might be set by the departments based on academic records, experience and research interest of the candidates.
- v. Relaxation for SC/ST & OBC candidates will be as per prescribed Government of India norms.

### 5.4 PhD Registration:

- i. The selected candidates are required to complete the online pre-registration process after paying the requisite fees through online transaction (the pre-registration period and the current fee structure can be found on the Institute website). After the pre-registration and deposition of fees, a PhD student will be formally registered on the date of his/her joining by filling up the required registration form.
- ii. A department may choose to offer PhD position to the wait-listed candidates once the pre-registration deadline is over.
- iii. Students waiting for their final Masters Degree result may be provisionally selected for PhD program but they must furnish the final result (mark-sheet) satisfying the qualification criteria within 30 days from the date of admission. Scholarship will not be given to the provisionally admitted students until the production of the final result. After production of the final result, the fellowships for the preceding months will be released with retroactive effect. If a provisionally admitted student fails to meet the eligibility criteria in his/her final results, admission to IISER Kolkata will stand cancelled.
- iv. Copies of joining report and attested forms of the new batch of externally-funded PhD students are to be submitted through the thesis supervisor, to the Academic Cell within two weeks of their joining IISER Kolkata.
- v. The PhD registration will be valid for six years from the date of registration.

## 5.5 PhD Orientation:

Each department conducts an orientation for the fresh batch of PhD students, normally within two working days of PhD registration. During the orientation the concerned HoD welcomes the students and introduces them to the departmental PGAC Convener. The students are briefed about the department's activities, course choices and about general PhD rules. Any other general queries of the students are also addressed during the orientation.

## 5.6 Appointment of PhD Supervisor:

**5.6.1 Generally,** a supervisor will be assigned to a student by the PGAC immediately or within two weeks from the date of admission through mutual consent. Any regular faculty member of the institute can supervise a PhD student. The departmental PGAC should send all the records related to supervisor allotment to the Academic Cell within three months from the start of the semester.

**5.6.2 Interdisciplinary work:** A student may join, with permission from the Heads of both the departments, a regular faculty from a department other than the student's parent department. In that case, he/she is assigned a Program Advisor from his/her parent department. In addition, the student will have to fulfil a part of the PhD coursework requirement (including the Comprehensive Examination and Graduate Seminar) of the parent department. Specifically, he/she will have to take a minimum of two courses (out of the total of six required for PhD coursework) from both departments which will be monitored by the Program Advisor. His/her PhD degree will be awarded from his/her parent department.

**5.6.3 Supervision by faculty members on contract:** Faculty members on contract may also supervise a PhD student provided a regular faculty member from the same department is allotted as co-supervisor, with the understanding that the co-supervisor will supervise the PhD student in the absence of the faculty member on contract. In case co-supervisor leaves the Institute, the faculty member on contract may continue as supervisor, and the department will have to allot another co-supervisor.

**5.6.4 Co-supervisor from another Institute/University:** Faculty members of IISER Kolkata can both act as co-supervisor for students and choose co-supervisors from other institutes. In order to induct a faculty member of another Institute as a co-supervisor, the supervisor has to submit a request to the DoAA, forwarded by the HoD and PGAC Convener, along with a written consent from the concerned external faculty. Upon receiving the DoAA's approval, intimation has to be sent to the DoFA office.

## 5.6.5 Change of PhD Supervisor:

- i. Change of supervisor is generally discouraged and is permitted only under very special circumstances. This will be decided by DoAA on recommendation of the HoD and Departmental PGAC convener after obtaining the consent of (i) the student, (ii) the present Supervisor(s) and (iii) the proposed Supervisor(s). For self-funded candidates, rules of the respective funding agency will be followed.
- ii. If the supervisor(s) leaves the Institute permanently or goes on leave for a period more than six months, the Departmental PGAC convener and HoD shall provide a co-supervisor in consultation with the supervisor and the student.

- iii. If a supervisor goes on leave for a period of less than six months but more than two weeks, HoD may appoint a supervisor in-charge in consultation with the supervisor for that period.
- iv. In case the thesis supervisor leaves the institute on deputation or on lien, an Administrative Guide or a Program Advisor will be suggested by the supervisor and approved by the Institute, through the HoD, to help the student in administrative formalities.

### **5.7 PhD Course Work:**

- i. PhD students of IISER Kolkata must undergo rigorous PhD course work. The purpose of the coursework is not just to prepare the student for the research he/she is going to conduct, but also to enable the student to acquire a comprehensive understanding of the overall discipline, which is needed for a fruitful career in teaching and independent research.
- ii. A student must register for the courses online before the semester starts, avoiding any clash in the Time Table.
- iii. The total credit requirement for PhD course work is 24 (ideally 6 courses of 4 credits each). The entire PhD course work must be completed within the first year of joining, out of which a minimum of 8 credits should be completed in the first semester. Only under exceptional circumstances, the coursework may spill into the 3<sup>rd</sup> semester, with permission from the DoAA.
- iv. The courses to be taken by PhD students are decided by the respective departments. The coursework should include one course on Research Methodology.
- v. The student should consult the PhD supervisor (or the departmental PGAC convener if the PhD supervisor is not assigned) before choosing the courses.
- vi. On approval of the departmental PGAC a student may take a PhD level course offered by another department as long as they meet the prerequisites (if any). Out of six courses, at most two can be taken from other departments.
- vii. For IPhD students all the PhD courses will be waived except the Research Methodology course. If a BS-MS student of IISER Kolkata joins the PhD Programme, the coursework may be partially waived upon recommendation from the RPC / PGAC.
- viii. For the successful completion of the PhD course work, a student must get grade 'C' or above in each of the courses taken. It is mandatory to complete the PhD coursework to continue in the PhD program.
- ix. In case a student is unable to secure grade 'C' in a course, s/he will be allowed to sit for a supplementary examination for that course, or to choose another course. If the student fails in the new course as well, s/he will be allowed one last attempt for supplementary examination. PhD students who fail in coursework will be allowed to complete the required 24 credits within the first 3 semesters of joining.
- x. The Academic Cell will keep track of the students who cannot secure a minimum of Grade C and will initiate the process of termination of their studentship.

## 5.8 Review of Progress:

**5.8.1 Research Progress Committee (RPC):** A 3-Member Research Progress Committee (RPC) will be constituted for all research scholars. The committee will comprise the Supervisor, and two other faculty members from any department (nominated by the supervisor). External faculty members may also be invited to join, depending upon requirement. The RPC will monitor and identify problems faced by students, if any, at an early stage. Students will have to submit a Progress Report and will have to present a talk in front of the RPC once a year. SRF upgradation interview as well as pre-submission open seminars can be initiated only on recommendation of the concerned RPC and PGAC. The submission of a thesis should be approved by the RPC on the basis of a pre-submission open seminar.

**5.8.2 Annual report:** Every PhD student is required to prepare and submit an Annual Progress Report to the RPC. After the RPC meeting, if the progress report is approved, it has to be communicated to the Academic Cell. The externally-funded students should send the annual progress report to the funding agency and should also submit a copy to the Academic Cell for record.

**5.8.3 Annual review by the RPC:** A student has to give a talk every year before the RPC summarizing his/her progress, and the RPC is expected to advise him or her and recommend critical steps.

- i. At the end of the 1st year, a student is supposed to have (a) completed the coursework, (b) identified the problem (can articulate the questions he/she is asking), and (c) done some literature survey to learn what is already known on that topic.
- ii. At the end of the second year, a student is supposed to have completed the above items that may have remained incomplete after the 1st year. In addition, by this time the literature survey must be thorough, he/she must identify the methodology to be followed, and should be able to do at least one piece of work that is either communicated or is ready for communication. If these conditions are satisfied, the RPC recommends conduction of the JRF to SRF upgradation exercise. Otherwise it may be deferred by a few months.
- iii. At the end of the 3rd and 4th years the student should present the incremental work done in the preceding year, and the papers published. By the middle of the 5th year the student should be in a position to write his/her thesis. The RPC meeting should be conducted at this stage. Finally, a last meeting of the RPC recommends conduction of the pre-submission open seminar and submission of the thesis.
- iv. The timing of the RPC meetings is not hard and fast. The supervisor may decide convenient timings. For example, the RPC meeting after the 2nd year may be scheduled after the student has completed one piece of work, so that the same RPC meeting can recommend the conduction of the SRF upgradation exercise. The meeting after the 4th year may be scheduled when the student is ready to write his/her thesis.

**5.8.4 Comprehensive Examination:**

A comprehensive examination is defined as a means to evaluate a student's comprehensive understanding of his/her discipline, ability to pose scientific questions and grasp of the methodology of doing research. The examination will test whether the student has sufficient preparation to continue research as a PhD student in the respective department of the Institute.

Comprehensive examination for PhD students will be conducted by the respective RPCs. It should normally be conducted within one month from the completion of coursework.

**5.9 Fellowship and Tenure:**

- i. For students with independent fellowship the amount of fellowship/contingency and tenure will be as per the norms and conditions of the concerned funding agency. Such students must initiate the process of fellowship activation immediately after joining and must submit copies of relevant forms to the Academic Cell for records.
- ii. For Institute-funded PhD students the fellowship amount will be as per MHRD norms. The tenure of Institute-funded fellows will be for five years.

**5.10 Contingency grant:**

- i. For students with independent fellowship the amount and duration of contingency fund will be as per the norms and conditions of the concerned funding agency.
- ii. Contingency fund will not be available for students funded by IISER Kolkata.

**5.11 JRF to SRF up-gradation:**

- i. A student should normally spend two years at the JRF level and will be upgraded to SRF level subject to fulfilment of certain criteria.
- ii. If the supervisor feels that the progress has been satisfactory, he/she will convene a meeting of the RPC at the end of the 2<sup>nd</sup> year. The RPC should check if the student has done a thorough literature survey, has decided the methodology to be followed, and has done at least one piece of work that is either communicated or ready for communication. If these requirements are satisfied, the RPC will recommend the conduction of the upgradation exercise.
- iii. The progress of the student would be evaluated by a selection committee comprising the PhD supervisor, the Joint/Co-Supervisor, the PGAC Convener/nominee and an External Expert (of the rank Associate Professor and above) from an academic institution. For externally funded students the constitution of the selection committee will be as per the requirement of the funding agency.
- iv. SRF upgradation will be effective after 2 years of JRF or from the date of evaluation, whichever is later. For externally funded students, the fellowship terms and conditions at the SRF level will be as per the norms and conditions of the concerned funding agency.

**5.12 Extension of tenure:** In some cases, if a PhD student is unable to complete the requirements of the degree within the stipulated time of 5 years, the DoAA, on recommendation of the RPC, may approve extension of his/her fellowship from the institute fund, on a case to case basis. Such extension will generally be up to a maximum of six months.

### **5.13 Supporting students who qualify for external fellowship after joining IISER Kolkata**

Maximum general support of fellowship for the PhD program at IISER Kolkata is for five years. In case an eligible student joins the PhD program at IISER Kolkata with Institute fellowship and qualifies for external funding later, then any difference in fellowship amount suffered due to the rules of the funding agency will be compensated by the Institute.

**5.14 Institute-fellowship support to externally funded students:** IISER-K may provide fellowship to the PhD/PhD students if their external funding takes time to be activated. This support can also be provided to students at the end of 5 years, if their external funding gets over. However, the fellowship support will be given only up to a maximum period of 6 months, making it a total of 5 years 6 months.

### **5.15 PhD Thesis Submission:**

#### **5.15.1 Before submission:**

- i. All students will have to carry out their major research in the Institute for at least a period of two years and six months from the date of PhD registration before the submission of the thesis.
- ii. When the supervisor feels that the thesis is ready for submission, he/she will convene a meeting of the RPC. If the RPC is convinced that the work done is sufficient for submission of the thesis, it will recommend conduction of the pre-submission open seminar.
- iii. Pre-submission open seminar can be organized by the PGAC only on recommendation of the concerned RPC. Upon satisfactory performance of a student in the pre-submission presentation, the PGAC will recommend submission of PhD thesis within three months. In case the student is unable to submit the thesis within this period due to unforeseen circumstances, an extension may be sought from the DoAA.
- iv. The thesis must be passed through 'Turnitin' for plagiarism check and the student must ensure that, apart from quotations, no part of the thesis is copied from any published material other than the student's own papers.

#### **5.15.2 Thesis submission for evaluation:**

- i. The thesis (2 spiral bound copies + one soft copy in CD) should be submitted to the HoD. A synopsis of the PhD thesis should also be submitted. It should be less than 10 page typed in Times New Roman 12 font, 1.5 line spacing. The HoD will then forward the thesis and the synopsis to the Academic Cell with a request to initiate the process of evaluation.
- ii. The Panel Form for reviewers' names suggested by the supervisor (and forwarded by the HoD) should also be submitted in a sealed envelope. At least ten names of potential reviewers (5 from Indian institutions and 5 from abroad, at the level of Professor or Associate Professor) should be suggested. Care should be taken to avoid any conflict of interest. Research collaborators of the student or the supervisor should not be suggested as examiner of the thesis.



**5.16 Evaluation of the PhD Thesis:**

- i. The thesis will be evaluated by four independent reviewers – one from India, two from abroad and the supervisor(s).
- ii. The order of preference of the suggested reviewers will be chosen by the DoAA. The Assistant Registrar (Academic) will seek consent of the suggested reviewers to evaluate the thesis in the order of preference, by sending them the synopsis. If any of the suggested examiners refuses to act as a reviewer or does not respond within 7 days, the next preferred reviewer from the same panel will be contacted.
- iii. On receipt of consent, the Assistant Registrar (Academic) will send the thesis to two foreign reviewers and one Indian reviewer for evaluation.
- iv. For evaluation of PhD thesis, an honorarium of Rs 5000.00 (five thousand only) will be paid to the Indian experts, whereas \$200 (two hundred USD) will be paid to the foreign expert.
- v. The reviewers will be requested to submit their evaluation report (in the prescribed format) within 6 weeks from the date of receipt of the thesis (scanned as well as a signed hard copy). The PhD supervisor will also be formally asked to submit her/his report within the stipulated time.
- vi. If a reviewer is unable to send the report within the stipulated time of 6 weeks, reminders will be sent by the Assistant Registrar (Academic). If the reviewer does not respond in spite of repeated reminders, the DoAA will send the thesis for evaluation to the next preferred reviewer from the panel.
- vii. However, if one of the two review reports from foreign reviewers is not received within the stipulated time, the DoAA may take a decision based on the available review reports (from one Indian reviewer and one foreign reviewer and the PhD supervisor).
- viii. The reviewers should be specifically requested for a critical evaluation of the quality and the quantity of the research work embodied in the thesis. The reviewer has to select one of the following statements in the Evaluation Report (with space for additional comments overleaf):
  - (a) The thesis is recommended for the award of the degree without any correction.
  - (b) The thesis is recommended for the award of the degree provided the following points (as listed overleaf) are clarified during Viva-Voce.
  - (c) The thesis is recommended for the award of the degree with minor revision (as listed overleaf/in the thesis)
  - (d) Substantial revisions involving rewriting of one or more chapters are necessary (mentioned in detail overleaf) without, however, doing any further research work.
  - (e) The thesis is not acceptable in the present form and needs to be rewritten. However, it reveals sufficient quality and quantity of work to warrant the student being given an opportunity for further research work and/or re-interpretation of results (see overleaf for details).
  - (f) The thesis is not recommended.



- ix. Upon receiving the reports, the DoAA will classify the reports into one of the following four categories:
  - (a) Category 1 (the thesis be accepted without any correction).
  - (b) Category 2 (thesis be accepted with minor revision).
  - (c) Category 3 (major revision is suggested, resending the thesis (after correction) to the concerned reviewer(s)).
  - (d) Category 4 (a complete rejection).
- x. Depending on the reports of the reviewers, the DoAA will decide whether the thesis can be accepted for viva voce or be rejected or be referred to a new reviewer. If one of the external reviewers recommends rejection, then an adjudicator from the same panel may be appointed.
- xi. Copies of the reports will be made available to the PhD supervisor(s) of the student concerned within a week of the receipt of the reviewers' reports, after classification of the same by DoAA.
- xii. The supervisor must ensure that all the corrections including modifications/revisions suggested by the external reviewers have been incorporated by the student.
  - (a) If the report is classified as Category 1 or 2, the revised thesis must be submitted to the DoAA within 15 days;
  - (b) If the report is classified as Category 3, the revised thesis must reach the DoAA within three months. However, the DoAA can extend the deadline of submission upon request.
- xiii. A thesis, if rejected, may be resubmitted once only after revision, not earlier than 1 year and not later than 2 years from the date of such intimation to the student by the DoAA. The thesis so resubmitted may be examined by the same reviewers or by new reviewers (as the DoAA decides). The procedure after receiving the new reports should be the same as above.
- xiii. Rejection even after resubmission will disqualify the student from further consideration for the award of the PhD degree in the topic chosen.

#### **5.17 Final Viva Voce:**

- i. For categories 1 and 2 above, the PGAC will organize his/her final viva voce (in form of an open seminar), with intimation to the Academic Cell at least 10 working days in advance.
- ii. The Academic Cell will send out a formal invitation to the Indian reviewer of the PhD thesis, who is expected to conduct the viva voce in the presence of RPC members and the PGAC convener.
- iii. In cases where the Indian examiner cannot physically attend the final viva voce of a student, the presentation may be arranged through video calling so that the examiner can participate and evaluate the thesis defence. This will be done only under exceptional circumstances.
- iv. The final report of the viva voce signed by the supervisor, the external examiner, the HoD along with the final copies of thesis (4 hardbound + 1 soft copy in CD) are to be submitted within 7 working days from the date of viva voce to the DoAA, who will place it in the subsequent Senate meeting for approval of the award of the PhD degree.

- v. The external examiner shall be entitled to an honorarium of Rs 2,000.00. In addition her/his travel (economy class air fare) and local hospitality will be covered by the institute as per standard norm.

### **5.18 Award of PhD Degree:**

On receipt of the approval of the Senate, the PhD degree may be conferred in the next convocation.

Upon request of the student a provisional certificate may be issued by the Dean of Academic Affairs based on the final report of the viva voce provided the student has duly submitted the 'No Dues' form.

### **5.19. Leave Rules:**

**5.19.1** The leave sanctioning authority for PhD students will be the Dean of Academic Affairs (DoAA). All applications should be routed through the respective supervisor and the HoD.

The PhD students receiving fellowships from the external funding agency will require permission from the respective funding agency as well as the DoAA, for any long leave exceeding 30 days.

The PhD students are entitled for the following categories of leave:

#### **5.19.2 Ordinary Leave:**

- i. A PhD student is eligible for 45 days leave with fellowship for each completed year from the date of his/her joining. This includes medical leave (Saturdays, Sundays and holidays during the leave period are counted towards leave, except for prefixed or suffixed holidays). The leave will be treated as part of the student's tenure.
- ii. Sanction of leave without fellowship may be considered by the Dean, Academic Affairs under special circumstances.
- iii. In case a student proceeds on leave before termination of Fellowship, he/she must join back before the expiry of tenure; failing which the tenure will be deemed to have terminated with effect from the date he/she proceeded on leave. A joining report should be communicated to the DoAA, in case of leave for more than seven days.

#### **5.19.3 Academic Leave:**

- i. PhD students may be allowed to attend Seminars / Conferences / Workshops / Training / Short-term courses etc. The duration of the leave will be decided, based on the recommendation of the supervisor.
- ii. Visit outside the Country to attend Seminars/Conferences/Workshops/ Training/ Short-term courses etc. must be intimated to the external funding agencies well in advance.
- iii. The fieldwork such as data collection, survey work / going to laboratories of other Institutes for use of instruments will be treated as 'on duty leave'.

**5.19.4 Maternity/Paternity Leave:**

- i. Women students with less than two surviving children are entitled to full fellowship plus HRA (if applicable) during the period of absence up to 180 days on grounds of maternity. The fellowship amount for leave period will be paid after the student resumes duty and submits a medical certificate in support of actual confinement. It is expected that the student will make up any deficiency in research progress during the remaining part of the tenure.
- ii. Male students with less than two surviving children are entitled for 15 days paternity leave during the confinement of his wife on submission of relevant documentary proof.

**5.20 Conduct and Discipline:**

Rules and regulations for conduct and discipline are common to all students of IISER Kolkata and will be informed to the PhD students at the time of their joining in form of an undertaking (Institute bye-laws). Failure to abide by these rules will lead to disciplinary action.

Unauthorized absence for more than a month, as communicated by the concerned supervisor/department through monthly attendance sheets, may lead to reduction of the fellowship amount, suspension, or termination.

**5.21 Termination of Studentship:**

The PhD studentship is liable to be terminated in the following events –

- i. Giving false information at the time of application / admission / registration
- ii. Failure in course work requirement
- iii. Not conforming to the regulations of the program
- iv. Consistent lack of progress in research
- v. Involved in any form of academic misconduct, e.g., plagiarism / data fabrication
- vi. Violation of conduct and discipline rules of the Institute
- vii. Not submitting the thesis within the stipulated period
- viii. Not enrolling for a semester within stipulated dates

Note: The Senate may make further amendment to the Rules and Regulations, if required. The amendment and the revised Rules and Regulations will be reflected in the revised Guidelines.

The PhD Rules and Regulations will be automatically applicable to the Integrated PhD students from third year onwards.

**5.22 Final Thesis:**

**5.22.1** Three copies of hard bound thesis and an electronic version in CD should be submitted to the Academic Cell within 7 days of the Viva Voce.

**5.22.2** The thesis must be passed through 'Turnitin' for plagiarism check and the student must ensure that, apart from quotations, no part of the thesis is copied from any published material other than the student's own papers.

**5.22.3 Format:**

- i. Page Size: A4/Back to Back
- ii. Binding: Spiral binding at the time of submission, hard bound at the time of defence
- iii. Cover:
  - (a) Colour: Black
  - (b) The top should have Title of the thesis, the name of the student, the year of completion and the Institute's name
  - (c) The backbone should have the title of the thesis, the student's name, and the year of completion.
- iv. Font type and Size: Times New Roman, 12 Pts. or any other equivalent font size.
- v. Line Spacing: 1.5
- vi. The front page should have the following information with centre alignment:
  - (a) Title of the Thesis
  - (b) Name of the degree
  - (c) Name of the student
  - (d) Roll No. of the student
  - (e) Name of the Supervisor
  - (f) Name of the Co-Supervisor if any
  - (g) Name of the Department
  - (h) Name of the Institute with its Logo
  - (i) Month, Year
- vii. Declaration of the student with his signature on academic integrity and copyright (template given below)
- viii. Certificate of the Supervisor with his signature (template given below)
- ix. Acknowledgement (no more than two pages)
- x. Dedication (optional)
- xi. Abstract
- xii. Chapters, starting with 'Introduction' and ending with 'Conclusion'
- xiii. References
- xiv. The CD label should have the following information:
  - (d) Name and Roll No. of the student
  - (e) Title of the Thesis
  - (f) Month, Year

**5.22.4 Template of Declaration by the student****Declaration by the student**

Date: \_\_\_\_\_

I, Mr./Ms. \_\_\_\_\_ Registration No. \_\_\_\_\_ dated \_\_\_\_\_, a student of Department of \_\_\_\_\_ of the Integrated PhD Program/ PhD Program of IISER Kolkata, hereby declare that this thesis is my own work and, to the best of my knowledge, it neither contains materials previously published or written by any other person, nor it has been submitted for any degree/diploma or any other academic award anywhere before.

I also declare that all copyrighted material incorporated into this thesis is in compliance with the Indian Copyright (Amendment) Act, 2012 and that I have received written permission from the copyright owners for my use of their work.

Signature

Name

Department of \_\_\_\_\_

Indian Institute of Science Education and Research Kolkata

Mohanpur 741246, West Bengal, India

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**5.22.5 Template of Certificate from the Supervisor****Certificate from the Supervisor**

Date: \_\_\_\_\_

This is to certify that the thesis entitled “\_\_\_\_\_” submitted by Mr./Ms. \_\_\_\_\_ Registration No. \_\_\_\_\_ dated \_\_\_\_\_, a student of Department of \_\_\_\_\_ of the Integrated PhD Program/ PhD Program of IISER Kolkata, is based upon his/her own research work under my supervision. This is also to certify that neither the thesis nor any part of it has been submitted for any degree/diploma or any other academic award anywhere before. In my opinion, the thesis fulfils the requirement for the award of the degree of Doctor of Philosophy.

Signature

Name

Professor/Associate Professor/Assistant Professor

Department of \_\_\_\_\_

Indian Institute of Science Education and Research Kolkata

Mohanpur 741246, West Bengal, India