INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT (IITRAM)

Ph.D. NORMS

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CONTENT SHEET

Abbreviations:

DOAP – Dean of Academic Programmes

ADOAP – Associate Dean of Academic Programmes

DOSA – Dean of Student Affairs

ADOSA – Associate Dean of Student Affairs

PPAC – Programme and Performance Appraisal Committee

DPPAC – Department Programme and Performance Appraisal Committee

1. Introduction

Institute of Infrastructure Technology Research and Management (IITRAM) offers Ph.D. programme in a wide range of areas in Engineering, Science, and Humanities & Social Sciences. The focus of the Ph.D. program is to remain at the forefront of advancing knowledge and offer research training that aligns with the current social and economic priorities of the country. It emphasizes fostering in students a capacity for independent and unbiased inquiry, along with instilling qualities of courage, integrity, awareness and sensitivity to the needs and aspirations of society. With these goals in view, the academic programme leading to the Ph.D. degree involves a minimum course credit requirement and a research thesis through which a student may develop their concepts and intellectual skills.

The highly motivated faculty members at IITRAM provide excellent opportunities for an outstanding research environment that is characterized by interdisciplinary and industrial collaborations. The Institute has made impeccable contributions with its cutting-edge research initiatives and outstanding state-of-the-art research laboratories. The Institute undertakes sponsored research and development projects from industrial and other organizations in the public and private sectors. The aim to cultivate a novel and constructive perspective among doctoral students has enabled IITRAM to establish itself as a leading institute with a remarkable reputation for excellence.

The vision of the Ph.D. programme is to develop strong fundamentals and innovative research for the infrastructural needs of the nation, build industry partnerships to activate research for real-world impact and disseminate solutions that benefit local communities and enhance sustainable economic growth. IITRAM encourages Ph.D. students to receive ample opportunities to pursue their research programmes in a truly motivating environment.

2. Admission

2.1 Academic Session

IITRAM offers admission to Ph.D. Programmes in the Autumn Semester and the Spring Semester. The admission schedule for each semester is notified by the Institute time to time.

2.2 Ph.D. Programme

Currently, the Ph.D. programme is offered in the following disciplines:
  i)   Chemistry

ii) Mathematics

iii) Physics

iv) Civil Engineering

v) Computer Science and Engineering

vi) Electrical Engineering

vii) Electronics Engineering

viii) English

ix) Economics

x) Psychology

xi) Sociology

xii) Mechanical Engineering

xiii) Aerospace Engineering

2.3 Eligibility for Admission

Candidate shall possess the following in appropriate subject areas:

i) **Engineering / Technology:**
A Master's degree in a relevant subject of Engineering / Technology with First Class* (55%** marks for SC/ST) and a Bachelor's degree in relevant subjects of Engineering / Technology with First Class* (55%** marks for SC/ST).

OR

B.Tech. with high CPI

ii) **Basic Sciences:**
Master's degree in relevant subjects of Science / Engineering with First class* (55%** marks for SC/ST) and Bachelor's degree in relevant subjects of Science / Engineering with First class* (55%** marks for SC/ST).

iii) **Humanities and Social Sciences:**
M.A. or equivalent degree in Humanities and Social Sciences subjects with 55% marks for the general category (50% for SC/ST)

OR

Master's degree in Commerce with 55% marks for the general category (50% for SC/ST)

OR

M.Sc. or equivalent degree in Science, with First Class or 60% marks (55% marks for SC/ST)

OR

Candidate with two years of PGDM from recognized institutions will be considered for the research areas consistent with their academic background.

Note: *For deciding First Class, the student must fulfil one of the following conditions:*

1. *A degree from university mentioning first class.*
2. *A minimum of 60% marks in the final year.*
3. *A minimum of 60% aggregate of all years or as specified by the university.*
4. *A CPI of 6 (out of 10) or proportional requirements when scales are other than 10.*

For deciding 55%**/ 50%***, the student must fulfil one of the following conditions:

1. *A minimum of 55% / 50% in the final year.*
2. *A minimum of 55% / 50% aggregate of all years or as specified by the university.*
3. *A CPI of 5.5 (out of 10) / 5 (out of 10) or proportional requirements when scales are other than 10.*

2.4 Duration of the Programme

- Ph.D. programme shall be for a minimum duration of **three** years, including coursework and a maximum of **six** years.
- Women candidates and persons with disabilities (more than 40% disability) may be allowed a relaxation of two years over the maximum duration of the Ph.D. programme. In addition, the women candidates may be provided Maternity Leave once for the entire duration of their Ph.D., up to 180 days.

3. Admission Procedure

Admission to the Institute's Ph.D. programme takes place in the Autumn and Spring semesters during the academic year. Notification is issued on the institute website and through advertisements in national newspapers and regional newspapers. Admission to all categories of students is granted on the basis of a Written Test and/or Interview. Detailed procedures and a notification will be uploaded to the Institute's website.

Prospective candidates satisfying the eligibility criteria are advised to acquaint themselves with the research areas/topics of the faculty members of the Institute for a suitable match of interest before applying.

4. Admission Category

The Institute admits Ph.D. candidates under the following categories:
(I) Full-time (Regular)
(II) Part-time Scholar

(I) Full-time (Regular) Ph.D. Programme

A student in this category works full-time for his/her Ph.D. degree. Under this category, admissions can be offered in one of the following sub-categories:

(1) Sponsored Candidate (SP):

College teachers / Polytechnic teachers/ Employees of Government Organizations / Employees of Public Sector Units are eligible to apply for this sub-category under the full-time Ph.D. programme. Candidates need to be sponsored by their employers to do research work at the Institute. They are expected to be released for full-time coursework and research at the Institute for a minimum period of three years. This category also includes candidates who have been released from government organizations or educational institutions on study leave for a period of not less than three years to do research work at IITRAM. They will not receive any financial support from IITRAM. A sponsorship letter should be submitted at the time of the Interview.

(2) Self-Financed Candidate (SF)

Any candidate fulfilling the eligibility criteria for Ph.D. admissions can apply as a Self-Financed candidate. These candidates have to complete their programme within the prescribed time without any financial support from IITRAM.

(3) Fellowship Awardee (FA)

Candidates in this category are necessarily financially supported by various Governments. / Semi Govt. schemes (QIP, CSIR, UGC, DAE, DST, DBT, NBHM, SHODH, etc.) and some other organizations (as per the norms of those organizations). They will not receive any financial support from IITRAM.

(4) Teaching Assistantship (TA)

Students under this category receive financial support from IITRAM as below:

- To get a Teaching Assistantship, the students concerned must assist in teaching activities as assigned by the respective Academic Unit, as per the Institute's norms.
- The assistantship is payable for a maximum duration of 3 years or up to the thesis submission, whichever is earlier.
- The continuation of the assistantship will be subject to satisfactory performance of the duty assigned by the Academic Units as well as satisfactory academic performance.
- Employees on the rolls (with pay) of any organization are not eligible for admission under this category.

The employees of any organization receiving salary/pay from the parent organization are not eligible for admission under the TA category. Such candidates can be considered under the SP/SF category if they are found suitable.

Admitted Ph.D. students getting assistantships from the Institute are encouraged to join the projects submitted by the Institute and sponsored by external agencies and to obtain the corresponding fellowships in lieu of the TA ship.

(5) Research Assistantship through Project (RAP)

Research fellows appointed in the sanctioned projects from various government agencies can apply to the Institute's Ph.D. programme after following the due procedure under this category. The remaining duration of the project at the time of admission should be at least one year. The candidates under this category are eligible for Research Assistantship from the sanctioned project fund based on the following norms:

- For students with an M.Tech. / M.E. or equivalent degree as the qualifying degree, the assistantship is payable only during the project duration. The monthly assistantship will be as per the project norms.
- Research Assistants are required to perform project related tasks assign to them and academic duties assigned by the Institute.

- The continuation of the assistantship will be subject to satisfactory performance of the duties assigned by the Academic Units as well as satisfactory academic performance.

- Employees on the rolls (with pay) of any organization are not eligible for admission under this category.

- If the project gets completed before the student completes his/her Ph.D. programme, his/her category will be converted to that of Self-financed unless he/she is granted an assistantship/fellowship from the Institute or any other agency.

- In case P.I. wishes to leave the Institute, the Institute can assign a Co-P.I. in consultation with the funding agency. In such a case, the P.I. has to transfer the funds for an assistantship to the Institute from his grant during the duration of the grant. He/she should be available for any consultation regarding the scholar's academic progress.

(II) Part-Time Ph.D. Programme

Students under this category are professionally employed persons, including the staff of IITRAM and faculty members of other institutes, who pursue the Ph.D. programme while continuing the duties of his/her services in the parent organization.

Under this category, admissions can be offered in one of the following sub-categories:

(1) Academic Professional

Faculty members working in recognized reputed academic organizations can apply under the Part-Time Ph.D. programme.

- The competence of these candidates will be assessed along with that of regular candidates.

- The place for research will be treated as IITRAM even though candidates may be carrying out part of the work at their original Institute.

- NO OBJECTION CERTIFICATE (NOC) from the employer must be submitted, giving an undertaking that the candidate would be relieved from the normal duties to fulfil the coursework requirements along with the application.

- The candidates selected under this category shall not be entitled to any financial support from IITRAM.

- The candidates are required to fulfil the coursework requirement for the Ph.D. Programme, which is for a minimum duration of one semester and a maximum of two semesters under normal circumstances.

- After fulfilling the mandatory coursework requirement, these candidates will register for Ph.D. thesis work with the supervisor from the Institute. Appointment of an external co-supervisor is optional based on recommendations of the supervisor and PPAC.

(2) Institute Staff of IITRAM (IS)

- This category is for the persons employed as Institute Staff at IITRAM & fulfilling the minimum eligibility criteria for Ph.D. admissions.

- The candidate should have been employed as Institute Staff for at least two years full-time (before the start of the semester in which admission is sought).

- The concerned academic unit will shortlist the eligible candidates. Admission will be on the basis of a written test and Interview as applicable to the regular Ph.D. programme.

- If selected, the permanency or otherwise of the candidate will not come in the way of the admission process.

- If an employee admitted under this category stops serving as Institute Staff while pursuing the degree, then he/she cannot continue under this category but may be considered under the Self-Financed (SF) category in a regular Ph.D. programme.

- The shortlisted candidates are required to produce a letter of recommendation from the Head of the Department / Coordinator at the time of the Interview.

(3) External (EX)

The candidates employed in an organization/industry where an R&D facility exists and desirous of pursuing a Ph.D. programme while in employment may apply for admission as external candidates. After fulfilling the minimum residential requirement of one full semester Spring/Autumn and completing the course work at the Institute, candidates will register for Ph.D. thesis work. To facilitate early completion of the course work on

case to case basis permitted by Chairman Academic Council, the candidates may register in the summer semester as applicable. After completion of course work, the candidate will start the research work with a Supervisor (internal) from the Institute and a Co-supervisor (external) from their parent organization, where they will be doing the research work. The admissions are based on the following norms:

- The competence of these candidates will be assessed along with that of regular candidates.
- The candidate should submit at the time of the test/interview the Sponsorship Certificate from the organization in which he/she is employed, giving an undertaking that the candidate would be released from the normal duties to fulfil the residential requirement for the coursework (and qualifier examination, if applicable). The certificate should also provide details of facilities relevant to the research programme and available to the candidate.
- The candidate is required to be at the Institute as a full-time student for the coursework (and qualifier examination, if applicable) of his/her Ph.D. Programme. The coursework is for a minimum duration of one semester and a maximum of two semesters under normal circumstances.
- To promote interaction between the internal supervisor and external co-supervisor, meetings should be arranged at least twice a year in the Institute or in the sponsoring organization.
- The Ph.D. registration of an external candidate would be reviewed at the end of each semester from the date of registration in terms of his progress in courses/seminars / approved research programme by the Research Progress Committee (RPC).
- Persons working in colleges/universities are not eligible under this category (they may apply under the category of Academic Professional).
- At the time of joining the programme, the students will have to produce a certificate from his / her employer that he/she has been fully relieved from normal duties during the semester (s) to complete the course work and other academic work at IITRAM.

In all exceptional cases, the permission from Chairman, Academic Council is mandatory.

4.1 Registration

All Ph.D. admissions are provisional until the completion of coursework. This confirmation takes place six months to a year after admission and only if the academic performance criterion set by the Institute is met. After the completion of coursework, the student shall register for Ph.D. research work with the supervisor from the Institute.

In case-to-case basis the registration to Ph.D. thesis can be made flexible with due permission from the Chairman Academic Council.

4.1.1 Semester wise registration

Students should register for prescribed courses/thesis work at the beginning of each semester. Without registration, any academic activity undergone by a student will not be counted towards the requirements of his/her degree.

The academic performance of students will be monitored regularly, and efforts will be made to identify those who are unable to cope with their studies.

The minimum CPI requirement for continuing in the programme or for graduation is 6.5. However, the requirement of minimum CPI may be relaxed, and students may be allowed to continue under the following condition;

> a. The minimum CPI (SPI) may be relaxed to 6.0 for the student in which he/she takes admission and registers. The student may be allowed to continue in the following semester on the recommendation of the Department Programme and Performance Appraisal Committee (DPPAC) and with the approval of the Chairperson, PPAC. A letter of warning will be issued by the head/coordinator of the student department.

4.2 Dropping of semester

A student can be allowed to drop an entire semester with prior approval of DPPAC in the following cases:

a) During a semester, if a student finds that he/she is unable to cope with the studies and/or does not have sufficient exposure to most of the courses registered in that semester due to severe health problem(s) or some other valid reasons beyond his/her control, he/she can opt to drop the entire semester on the recommendation from Convener, DPPAC. All these cases must be approved by the PPAC. In case of severe health problem(s), medical certificate(s) issued by the designated Medical Officer of IITRAM is essential. If the

medical certificate is issued by other hospitals and/or private practitioners, the certificate should be duly authenticated by the Medical Officer at IITRAM.

b) If a student wants to work in an industry with the aim of gaining valuable work experience, he/she may opt for dropping a semester.

c) A student will not be permitted to drop a semester after the award of XX grade in the semester examination.

d) If a student drops the semester after the date of late registration, fees paid for that semester will not be refunded or adjusted in subsequent semesters. However, if a student drops the semester before the date of late registration, he/she has to pay the semester continuation fee for that semester. The semester continuation fee is equal to 20% of the total stipulated fee, which is prescribed from time to time by the Institute.

e) Such a break from studies is normally not permitted for a continuous period in excess of one year.

f) Hostel accommodation and other institutional facilities will not be extended in any semester for which the student has not registered.

4.3 Exit from Ph.D. Programme

A Ph.D. student may withdraw anytime from his/her academic programme, provided he/she makes a written request and her/his request is endorsed by DPPAC and recommended by PPAC. The written request will be further approved by the Chairman Academic Council. A letter of withdrawal will be issued by the Academic office.

5. Programmes of Study

The Ph.D. programme consists of coursework in the relevant disciplines of their specialization and research work. These courses are from two broad categories. The first category consists of one or more general courses, such as Research Methodology and other allied areas. In the second category, students are exposed to the subjects in their chosen specialization (or field) of study.

After successful completion of the requisite coursework, students need to focus on the research work in the chosen field under the guidance of the supervisor.

5.1 Curriculum

Every department has a prescribed course structure for its Ph.D. programme. It prescribes all the courses, laboratories, and other requirements for the degree. It also decides the progression of courses and gives the syllabus and list of text/reference books for each course.

5.2 Course credit structure

The student is required to put in a certain amount of academic work to acquire a particular degree, which will be measured in terms of credits. A student earns credits by successfully completing courses and other academic requirements every semester. The amount of credit associated with the course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other activities is dependent upon the quantum of work expected to be put in.

(1) Theory and Laboratory courses: Courses are broadly classified as Theory courses and Laboratory courses. A theory course consists of Lectures (L) and tutorial (T) hours. Practical (P) hours may be available in special cases. Laboratory courses consist of practical hours and may have tutorial hours in special cases. Credit (C) for a course is dependent on the number of hours of instruction per week in that course.

(2) Credit Seminar: Credit Seminar is a two-credit course wherein, under the guidance of a faculty member, the student is expected to do an in-depth study in a specialized area. There will be a seminar presentation by the student, before a panel constituted for the purpose by the department. The panel will evaluate the performance of a student at the end of the first semester (the semester in which admission is sought).

5.3 Modes of evaluation for theory courses

Various modes of assessment are used to rate student performance in theory courses. These include quizzes, class tests, home assignments, group assignments, term projects, viva voce, mid-semester and end-semester examinations. Instructors may offer take-home tests or open-book tests. Relative weightage for in-semester evaluation is typically between 50-60%. This will consist of one mid-semester test with a minimum of two hours of duration of about 25-30% weightage to be held as per the schedule fixed in the academic calendar. Two quizzes (or one quiz and one test), home assignments, group assignments, term project(s), and viva voce shall make up the rest of the assessment. The instructor may set aside a maximum of 10% of the in-semester marks for active participation in class and the initiatives shown by the student.

Make-up for absence from any in-semester evaluations, like mid-semester/tests/quizzes, will be at the discretion of the instructor following the due procedure.

The end-semester examination will be held as per the schedule fixed in the Academic Calendar, and the relative weightage will be 40-50%. It is normally of three hours duration and will cover the full syllabus of the course but not necessarily close book only. The end-semester examination is mandatory. The instructor awards an XX grade for those students not appearing in the end-semester examination if they have sufficient attendance and satisfactory in-semester performance. Students are eligible for an end-semester re-examination only on medical grounds authenticated by a designated Medical Officer at IITRAM.

5.4 Credit requirements

Sr. No.	Particulars	Credit requirement
1	Research Scholar admitted to Engineering/ Technology Departments	Minimum 14 credits
2	Research Scholar admitted to Basic Sciences/ Humanities and Social Sciences Departments	Minimum 16 credits

- All research scholars in Engineering, Basic Sciences & Humanities and Social Sciences have to earn a minimum of six credits from core theory subjects.
- A minimum of one semester and a maximum of two semesters of coursework are to be completed under normal circumstances from the date of joining IITRAM.

In all exceptional cases, the permission from Chairman, Academic Council is mandatory.

5.5 Grading of Ph.D. thesis

- After completion of coursework, all Ph.D. students must register for the **Ph.D. thesis course** every semester (January and August) till the completion of the programme.
- A semester grade report will be issued at the end of every semester with the *grades obtained by the student for his/her Ph.D. thesis

    *SS for Satisfactory
     US for Unsatisfactory

Course Code	Course Name	Course Credit	Grade Obtained
*XXXX	Ph.D Thesis	--	SS: Satisfactory
			US: Unsatisfactory

*According to the Institute's usual practice

5.6 Research Progress

The Research Progress Committee (RPC) shall be with the following constitution:
- Chairman (Coordinator/Head of Department)
- Convener: Thesis Supervisor(s)
- Internal member: Faculty from the Department
- External member: Faculty outside the Department

In case of the Chairman being supervisor, a faculty nominated by the Coordinator / Head of the Department would serve the same purpose and chair the committee.

The student's research progress is continuously monitored through the research progress review. The research scholar shall appear before RPC immediately after completion of coursework and subsequently every six months till the Open Colloquium to make a presentation of the progress of his/her work for evaluation and further guidance. The six monthly progress report shall be submitted to the academic office, and a copy will be sent to the research scholar. In case of an unsatisfactory report, the student will have to reappear within one month in front of the RPC committee. If a student earns US grade in two consecutive semesters the programme may be terminated after approval from the Chairman Academic Council.

6. Thesis Submission

The thesis shall contain a critical account of the students' research. It should be characterized by the discovery of facts or a fresh approach towards the interpretation of facts and theories or a significant contribution to knowledge or development of innovative products and technologies or a combination of these. It should bear evidence of the candidate's capacity for analysis and judgment as well as his ability to carry out independent investigation, design or development.

6.1 Guidelines

a. The research student must have a minimum two publications / granted patents from his/her Ph.D. thesis or be accepted for publication in the SCI or other equivalent peer-reviewed indexed journals as a lead/first author.

Any exceptional contribution resulted from innovation work would be counted on a case to case basis with due approval from Chairman, Academic Council based on the recommendation of the RPC.

b. If the RPC recommends that the quality and the quantity of the research work (in terms of research publication) is sufficient, the student will be asked to prepare a draft copy of the thesis. RPC recommendation should be submitted to the Dean/Associate Dean PG programme with details of publication according to Ph.D. norms for permission of Open Colloquium.

c. The research student will present the **Open Colloquium** on his/her research work, and it shall be adequately notified by the supervisor to the Institute.

d. The research student shall be required to submit one soft bound copy of the synopsis and thesis along with necessary documents within one month of the Open Colloquium. A student failing to submit the thesis within stipulated deadline would require to appear for Open Colloquium again.

e. The supervisor should also submit the soft copy of the same to the Dean/Associate Dean Academic Programmes-PG.

f. The students' declaration page will have the signature of only the student. The format of the declaration will be decided by the academic section from time to time.

g. The candidate will have to fill out proforma as decided by the academic section for the submission of the thesis.

6.2 Panel of Examiners

A panel of at least five experts each from India and abroad in the area of the Ph.D. thesis preferably at the level of professor or equivalent would be suggested by the supervisor(s) while forwarding the recommendation of RPC for submission of the thesis. Any person working in the laboratory(ies)/ Institution(s) where the research candidate or supervisor(s) from outside

the institution, if any, is employed cannot, however, appear in the panel of examiners. Any person related to the candidate or supervisor(s) should not appear in the panel of examiners.

6.3 Thesis Evaluation

1. The thesis shall be forwarded to two experts from the list of examiners, one from India and one from abroad, with the request for a detailed assessment report and his/her recommendations on the prescribed pro forma within six weeks' time after obtaining approval of Chairman Academic Council by the office of the Dean/Associate Dean Academic Programmes-PG. The examiners shall submit report separately on the thesis and forward their recommendation. Once the reports of the examiners have been accepted as satisfactory the candidate will have to defend his/her thesis before a viva voce board consisting of all RPC members and the Indian 'external' examiner.

2. Examiners will examine the thesis individually with a view to judge that the thesis is a piece of research work characterized by;

    (i) The discovery of facts, or

    (ii) A fresh approach towards interpretation and application of facts or theories or

    (iii) Development of innovative products and technologies

3. Each examiner will send detailed comments on the research work along with a clear recommendation stating one of the following:

    (i) The thesis is accepted for the award of Ph.D. in its present form.

<div align="center">or</div>

    (ii) The thesis is accepted for the award of Ph.D. Degree subject to clarification of certain points at a time of oral defence (list of points should be enclosed)

<div align="center">or</div>

    (iii) The thesis is accepted for the award of a Ph.D. degree, subject to the minor corrections suggested by the examiner (Thesis with minor corrections need not be sent to the examiner)

<div align="center">or</div>

(iv) The thesis is accepted for the award of a Ph.D. degree subject to the revision and resubmission of the thesis by the candidate as suggested by the examiner (Thesis with corrections should be referred back to the examiner for final assessment). In addition, the candidate also answers satisfactorily to the queries specifically mentioned in the examiner's report at the time of oral defence

or

(v) The thesis is rejected

4. One of the external examiners does not recommend the award of the degree and rejects the thesis while the other external examiner recommends the award. The RPC in such case may either ask the candidate to modify the thesis as suggested within a given time not exceeding six months and send the modified thesis to the same examiner again or recommend to the Chairman Academic Council the appointment of another external examiner and send the thesis to him in its original form. The recommendation of this "third" examiner, at this stage, shall be taken as final.

6.4 Oral Defence

1. The copies of the thesis examiners' reports shall be sent to the supervisor with the request to provide these to the candidate so that he/she may prepare to answer the queries raised in the report during oral defence. If the thesis is recommended for the award of a degree, the candidate shall be required to defend his / her work/thesis orally (Oral Defence) before a duly constituted committee hereinafter referred to as the Oral Defence Committee (ODC). The Chairman Academic Council approves the thesis supervisor and Chairman ODC to arrange for the conduct of oral thesis defence. The oral thesis defence shall be adequately notified so as to enable interested staff members and students to attend it.

2. (i) The ODC shall be with the following constitution:
   - Chairman (Coordinator/Head of Department)
   - External Examiner
   - Internal Examiner: RPC Members
   - Convener: Thesis Supervisor(s)

The oral defence of the candidate's thesis shall be arranged as early as possible and normally within one month from the date of receipt of communication from the Chairman Academic Council for holding the viva-voce examination.

(ii) The Chairman Academic Council will decide which examiner should be included in the panel for ODC.

3. After successful completion of oral defence, the Oral Defence Committee shall provide the research candidate with a list of all corrections and modifications in the thesis (if required), including suggestions made by the examiners during the thesis evaluation.

4. After the successful completion of the oral defence, the candidate is required to make all the changes suggested during the oral defence by the examiners or members of the oral defence committee and submit revised soft and hard copies to the Chairman Academic Council after duly certified by the supervisor(s).

5. On the completion of the oral defence, the Oral Defence Committee shall recommend to the Chairman Academic Council one of the following courses of action:

(i) that the degree be awarded; or

(ii) that the research candidate be re-examined at a later specified time in a specified manner;

6. Based on the final completion report of the oral defence as well as the submission of hard copies of the thesis, a provisional degree certificate will be issued after completion of other formalities as prescribed by the Academic Section / PG-Student Section.

7. **Leaves (Leave rule for Ph.D. scholars has been submitted separately for approval of Academic Council)**

7.1 Personal Leave

- Research scholars under Sponsored (SP)/ Self-financed (SF)/ Fellowship awardee (FA) / Teaching assistantship (TA)/ Research Assistantship through Project (RAP) and Junior Research Fellow (JRF) / Senior Research Fellow (SRF) / Project Staffs are entitled to a maximum of 30 days of personal leave in an academic calendar, which cannot be carried forward to the next academic year. This is in addition to public holidays declared by the Institute. No loss of financial assistantship is associated with personal leave subject to prior approval.

- Research scholars are not entitled for vacation leave (including during Summer/Winter).

7.2 Medical Leave

- Research scholars are entitled to 10 days of medical leave per academic year, supported by a medical certificate from a registered medical practitioner (endorsed by the Institute Medical Officer, as applicable). The accrued medical leave can be carried over to the next academic year, accumulating up to 30 days.

7.3 Maternity Leave

- Women research scholars/project staff are entitled to maternity leave at the full rate for a period not exceeding 180 days, once during the tenure of their Ph.D./project. Maternity leave of up to 6 weeks can also be granted for miscarriage, including medical termination of pregnancy, with proper medical certification. Maternity leave can be combined with personal leave and does not result in any loss of financial assistantship, provided it is supported by a medical certificate.

7.4 Paternity Leave

- Male research scholars/project staff are entitled to 15 days of paternity leave once during the tenure of the Ph.D./project, supported by a medical certificate.

7.5 Special Leave to attend Seminars / Conferences in India / abroad to present research papers is admissible as follows.

Event	Duration	Provision of Scholarship	Sanctioning Authority
*Conference / Seminar	5 working days per semester	As per the admission category/project conditions	Department Coordinator followed by Dean/Asso. Dean-PG & Research
* Internship	Up to 6 months during the entire tenure of the Ph.D. program / project	No	Director/Director General (Through proper channel)

* In all exceptional cases, permission of Director General of the Institute is mandatory.

Any leave, within the entitlement of the scholar, should be recommended by the Ph. D. supervisor / Project Investigator (PI) and authorized by the Head of the Department/Department Coordinator, with intimation to the Dean/Associate Dean (Academic Programs-UG/PG & Research) or Dean/Associate Dean (Research and Development) as applicable. Absence from the Institute without approval of sanctioning authority results in a loss of financial assistantship/scholarship/salary for the period of absence and may lead to the termination of the Ph.D. registration/service. Any leave exceeding more than 15 days should be applied at least 10 days prior to availing the leave.

Note: If any research scholar/project staff resigns, he/she shall not be granted either prior or subsequent to his/her resignation, any leave due to his/her credit. However, sanctioning authority may approve leave to research scholar/project staff, if in the opinion of the sanctioning authority, the circumstances of the case justify such grant of leave. Any exceptional cases shall be subject to approval by Director General of the Institute

7.5 Leave rules for JRF / SRF

JRF/SRF who are not enrolled in Ph.D. program at IITRAM are eligible only for Casual leave as per the Institute norms. Maternity leave as per the Govt. of India instructions issued from time to time would be available to female candidates in all categories.

8. Grading of course work

8.1 Grades

For every course taken by a student, he/she is assigned a grade based on his/her combined performance over a semester in all the assessments in that course. These grades are described by the symbols AA, AB, BB, BC, CC, CD, DD, FR, XX, PP, and NP. Each of these indicates a qualitative assessment of the students' performance and also carries the quantitative (numeric equivalent) called the grade point on the scale of 10 as per Table 1.

Table 1: Grade Points

Letter Grade	Grade Point	Remarks
AP	10	Academic Excellence
AA	10	Outstanding
AB	9	Excellent
BB	8	Very good

BC	7	Good
CC	6	Average
CD	5	Below average
DD	4	Marginal; Minimum passing grade
EE	0	Poor, to repeat /re- appear in exam.
FR	0	Need improvement- Repeat the course
XX	0	Fail due to lack of attendance
PP	Pass	Do not carry any grade point
NP	Not Pass	Repeat the course or activity
II	--	Incomplete (due to illness)

PP grade is not used for the calculation of CPI/SPI.

8.2 Description of grades

AP – Grade for Academic excellence: AP grade can be awarded to less than or equal to 2% (or 1 in a course of student strength less than 50) of student strength with a Grade Point of 10 with a line of justification from a faculty member.

AA grade is awarded to students for outstanding achievement. Individual course coordinators may set a criterion for awarding an 'AA' grade. DD grade stands for marginal performance; i.e. it is the minimum passing grade in any course and the percentage requirements may be set different for different courses. Other grades vary between 'AA' and 'DD' as described above.

EE – Grade for Students who failed to meet the passing requirements by less than or equal to 10% of passing marks. EE – Grade can be awarded to students who failed to meet the passing requirements by less than or equal to 10% of passing marks, but have satisfactory performance in the semester. They would be allowed to appear for a make-up examination as described earlier. Such students can be offered a maximum of a 'DD' grade on clearing the course.

II – Grade to support candidates who missed the exams due to illness. II Grade can be awarded when a student does not appear for the final examination but has satisfactory performance in the semester. In such a case the student can appear for the make-up examination as described earlier, provided he/she produces a medical certificate from the institute doctor or a proof of emergency. In such case, there would not be any upper cap of grade for that course. An `II' grade must, however, be converted by the Instructor-in-charge into an appropriate letter grade and communicated to the undergraduate office by the last date specified in the Academic Calendar. Any outstanding `II' after this date shall be converted automatically into an FR grade. In the case of project courses `II' may not be awarded for mere non-completion of the project due to lack of facility etc.

8.3 SPI and CPI

In order to graduate, a student must clear all courses as per the respective programme curriculum, satisfying the minimum credit requirement in each course category.

8.3.1 Semester Performance Index (SPI)

The performance of a student in a semester is indicated by a number called Semester Performance Index, SPI. SPI is the weighted average of the grade points obtained in all the courses registered by the student during the semester. For example, if a student passes courses (theory / laboratory / Projects / Seminar etc.) in a semester with credits $C1, C2, C3, C4,$ and $C5$ and her /his grade points in these courses are g1, g2, g3, g4, g5 respectively, then her/his SPI is equal to

$$SPI = \frac{C1g1 + C2g2 + C3g3 + C4g4 + C5g5}{C1 + C2 + C3 + C4 + C5}$$

The SPI is calculated to two decimal places. The SPI for any semester will take into consideration the FR grades awarded in that semester. For example, if a student has failed in course 4, the SPI will then be computed as:

$$SPI = \frac{C1g1 + C2g2 + C3g3 + C4 * zero + C5g5}{C1 + C2 + C3 + C4 + C5}$$

The courses which do not form the minimum requirement of the degrees will not be considered for calculation of the SPI. Such additional courses undertaken and the grades earned by the student will be shown separately.

8.3.2 Cumulative Performance Index (CPI)

An up to date assessment of the overall performance of a student from the time s/he entered the Institute is obtained by calculating a number called the Cumulative Performance Index, CPI in a manner similar to the calculation of SPI. The CPI, therefore considers all the courses registered by the student, towards the minimum requirement of the degree s/he has enrolled for, since s/he entered the Institute. The CPI is calculated at the end of every semester up to two decimal places.

The CPI will reflect the failed status in case of FR grade(s), till the course(s) is/are cleared. When the courses(s) is/are cleared by obtaining a pass grade on subsequent registration(s) the CPI will only reflect the new grade and not the fail grades earned earlier.

Example: Up to semester 'X' a student has registered for n courses, among which s/he has an "FR" grade in course i. The semester grade report at the end of semester 'X' therefore will contain a CPI calculated as:

$$CPI = \frac{C1g1 + C2g2 + C3g3 + \cdots + Ci * zero + \cdots Cngn}{C1 + C2 + C3 + \cdots Ci + \cdots Cn}$$

Even if a student has failed in a course more than once, the course will figure only once in the numerator as well as the denominator.

At the end of semester 'X'+1 s/he has registered for four more courses including the backlog course i and has cleared all the courses including the backlog courses, the CPI at the end of this semester is calculated as

$$CPI = \frac{C1g1 + C2g2 + C3g3 + \cdots + Cigi + \cdots Cngn}{C1 + C2 + C3 + \cdots Ci + \cdots Cn}$$

The courses which do not form the minimum requirement of the degrees will not be considered for calculation of the basic CPI. These courses will be shown separately, and a separate CPI will be calculated for these courses. There will also be a combined CPI calculated which considers all the credits earned by the student.

8.4 Grade Norms

(a) A student is considered to have passed a course if he/she obtains either DD or a better grade.

(b) The grade FR is awarded if in the opinion of the instructor:

 (i) The performance of the student is very poor,

 (ii) The student has inadequate exposure to the course, or

 (iii) The student engages in any kind of malpractice during the semester.

(c) The candidate with FR grade(s) will have to register for the same course(s) in subsequent semesters when the course(s) are offered again. However, he will not be awarded any grade better than BB.

(d) The grade XX is awarded:

 (i) If the student has less than 85% attendance in the course, or

 (ii) If the student has missed a significant number of in-semester evaluations for non-medical reasons.

 The candidate with an XX grade will not be allowed to take the end semester examination.

(e) The candidate with XX grade(s) will have to register for the same course(s) in subsequent semesters when the course(s) are offered again. However, he will not be awarded any grade better than BB except for medical grounds.

(f) The grade XX is awarded in a theory/laboratory course if the student as the requisite 85% attendance and has successfully completed all the in-semester evaluation requirements but has not appeared in the end-semester examination due to medical reasons. Such a student is eligible for a make-up examination before the commencement of the next semester if he/she provides the relevant medical documents approved by designated Medical Officer at IITRAM. Upon completion of the make-up examination, due grade will be assigned in the place of XX. If the reason for absence is not medical, the XX grade will revert to an FR grade.

(g) Valid reasons for end-semester make-up examination (including the reasons mentioned elsewhere in this document):

(i) Serious illness/personal accident of student and/or

(ii) Serious illness/death/ accident of parent/guardian of student

Each of such cases is to be approved by PPAC.

(h) Academic malpractices: In case of malpractice during any of the in semester evaluations like assignments, quizzes, tests and examinations, the instructor(s) can award an FR grade in the course immediately and report it to the ADAP. If the ADAP feels that the seriousness of the situation warrants it, the matter may be referred to the PPAC and/or Academic Council and serious actions like termination for one semester/term or even from the programme shall be imposed.

9. Plagiarism Policy

Definitions pla·gia·rism (noun \ ˈplā-jə- ˌri-zəm \): the act of using another person's words or ideas without giving credit to that person pla·gia·rize (verb \ ˈplā-jə-ˌrīz \): to use the words or ideas of another person as if they were your own words or ideas (http://www.merriam-webster.com/dictionary/plagiarize). Students copying from each other or from any other sources (including Internet, books, monographs, research papers, etc.) for their academic activities without giving proper reference to the original source fall under plagiarism.

At IITRAM, plagiarism is strictly prohibited. A case of plagiarism will be dealt by DPPAC and could be referred to the institute disciplinary action committee; the committee, depending upon the severity of the case may give FF in the course, suspend the student for a certain period,

or may expel the student from the Institute. A faculty has the right to check the students' submission at any time and take necessary action. It is the responsibility of students to ensure the originality of their work, be aware of this policy and abide by it.

10. Change, Modification and applicability of Academic Policies

Academic policies should be reviewed by PPAC regularly before commencement of a semester and changes /modifications should be recommended to Academic Council for approval. On the other hand, in the interest of students or in the interest of Institute, any formal or informal decision taken by PPAC, ADOAP, ADOSA, Faculty Advisor or any other institute body may be changed by Director General (DG) of Institute. These norms are valid for other Ph. D. programmes.