

Amendments to Ph.D. Regulations 2019

(Ref: Minutes of 54th senate meeting, 21 May, 2021)

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P.1.0 Introduction

P.1.1 The Regulations govern the conditions on imparting courses of instruction, conduct of examinations and evaluation of research scholars' performance leading to the Ph.D. Degree of the National Institute of Technology Tiruchirappalli.

P.1.2 Doctoral Programme leading to Ph.D. is offered in the following Departments of the Institute:

S. No.	Department	S. No.	Department
1	Architecture	10	Humanities and Social Science
2	Chemical Engineering	11	Instrumentation and Control Engineering
3	Chemistry	12	Management Studies
4	Civil Engineering	13	Mathematics
5	Computer Applications	14	Mechanical Engineering
6	Computer Science and Engineering	15	Metallurgical and Materials Engineering
7	Electrical and Electronics Engineering	16	Physics
8	Electronics and Communication Engineering	17	Production Engineering
9	Energy and Environment		

P.1.3 The provisions of these Regulations shall be applicable to any new disciplines that are introduced from time to time and added to the above list.

P.1.4 These regulations will include the left-out batches of scholars admitted in 2012-2013 and onwards.

P.2.0 Educational Qualifications

This section describes the minimum educational qualifications necessary for admission to the Ph.D programme of the Institute. Broadly, there are two categories of PhD programme, Full-time and Part-time.

There are three channels – Direct, Integrated and Lateral – through which one can apply for a Full-Time PhD programme.

P.2.1. DIRECT APPLICANTS: This channel is meant for exceptionally outperforming applicants currently in their final semester of their B.E./B.Tech. (4 year)/B.Arch. (5 year) degree programme and all exams cleared in one attempt without any arrears/supplementary. If the applicant is (i) in the OC/GEN-EWS/OBC-NCL category he/she must possess 80% or above aggregate marks (equivalently, CGPA at least 8.5/10), and (ii) in the SC/ST/PwD category he/she must possess 75% aggregate or above aggregate marks (equivalently, CGPA at least 8.0/10.0) for admission to the Ph.D. program. In addition, a qualified GATE, or an equivalent National level test, score is mandatory. These applicants are eligible for Full-Time HTRA category in the Architecture and Engineering departments only. Selected candidates will be joining a two-degree M.Tech/M.Arch. + Ph.D. programme in Engineering / Architecture

P.2.2 INTEGRATED APPLICANTS: This channel is meant for exceptionally outperforming applicants admitted through CCMT and currently completing their 1st year master program (M.Tech/M.Arch) of the institute (NIT-T only) with minimum CGPA of 8.5 upto 2nd semester (i.e. CGPA ≥ 8.5 and with no course having grade less than C) along with B.E./B.Tech. (4 year) / B.Arch. (5 year) degree. At UG level, if the applicant is (i) in the OC/GEN-EWS/OBC-NCL category he/she must possess 60% or above aggregate marks (equivalently, CGPA at least 6.5/10), and (ii) in the SC/ST/PwD category he/she must possess 55% aggregate or above aggregate marks (equivalently, CGPA at least 6.0/10.0) for admission to the Ph.D. program. Selected candidates will be joining a two-degree M.Tech/M.Arch. + Ph.D. programme in Engineering / Architecture

P.2.3. LATERAL APPLICANTS: This channel is open for applicants with masters' degrees (including those currently in their final semester). If the applicant is (i) in the OC/GEN-EWS/OBC-NCL category he/she must possess 60% or above aggregate marks (equivalently, CGPA at least 6.5/10), and (ii) in the SC/ST/PwD category he/she must possess 55% aggregate or above aggregate marks (equivalently, CGPA at least 6.0/10.0), in both UG and PG degrees for admission to the Ph.D. program. In addition, a qualified GATE, or an equivalent National level test- score is mandatory.

Part-time PhD programme is available only for lateral applicants. More details on this category are available in section 3.0 on Student status.

P.2.4. Additional Eligibility Criteria

Additional department-wise eligibility requirements are as follows. However, these requirements are tentative and are subject to change from semester to semester, and the applicants are directed to watch for updated criteria published in the admission brochures made available along with the call for admissions.

2.3.1. Department of Architecture

Applicants with Bachelor's degree in Architecture/Planning and Master's degree in Architecture/Design/Planning/Building Engineering and Management/Building technology or its equivalent.

2.3.2. Department of Chemical Engineering

Applicants with B.E/ B.Tech. in Engineering/Technology followed by M.E./M.Tech./MS (By research) in Chemical Biochemical, Biotechnology, Petroleum, Petrochemical, Electrochemical, Polymer, Nano Technology, Industrial Safety Engg, Thermal Power Engineering, Environmental Engg, Energy and Environmental Engg, Process Control, Electronics and Instrumentation, Industrial Biotechnology, Instrumentation Engg, Process Control and Instrumentation, Control and Instrumentation, Applied Instrumentation, Control Systems and Instrumentation, Instrumentation and Control Engg, Process Instrumentation.

M.Sc. degree with specializations including Industrial Chemistry, Advanced Biochemistry, Environmental Management, Instrumentation Technology, Instrumentation and Applied Physics, Environmental Science, Biotechnology, Nano Technology, Material Science, Applied Chemistry, Applied Physics, Industrial Biotechnology, Polymer Science, Applied Electronics

2.3.3. Department of Civil Engineering

Applicants with B.E. / B. Tech in Civil Engineering and M.E./M. Tech. specialization in Structural Engineering/Transportation Engineering/ Environmental Engineering/Hydraulics and water resources/GIS and Remote sensing/ Geotechnical Engineering

2.3.4. Department of Computer Applications

Applicants with masters' degrees in Computer Applications or M.Sc. (Computer Science/OR&CA) with a qualified GATE score / UGC/ CSIR/ NBHM/ NET score, M.E./M. Tech. in Computer Science & Engg. or Data Analytics with a qualified GATE score

2.3.5. Department of Computer Science & Engineering

Bachelor's and Master's / M.S. (by Research) degree in Engineering / Technology in the relevant branch of study.

2.3.6. Department of Energy and Environment Engineering

Applicants with B.E/ B.Tech. in Engg/Tech. (Energy and Environment/Energy/ Chemical/ Biotechnology/ Mechanical) followed by M.E/ M. Tech./MS (by-research) in Energy and Environment/Chemical/Biotechnology/Mechanical/Energy Engg./Environmental Engg./Energy conservation and mgmt/Renewable Energy and equivalent in appropriate branch of study related to energy and environment.

2.3.7. Department of Electronics & Communication Engineering

Bachelor's and Master's / M.S. (by Research) degree in Engineering / Technology in the appropriate branch of study.

2.3.8. Department of Electrical and Electronics Engineering

B. E or B. Tech in (Electrical Engineering, Electrical and Electronics Engineering) and Masters in any relevant field.

2.3.9. Department of Humanities & Social Sciences

Masters' degrees in the relevant discipline of Humanities/Social Science/Economics/Business Administration/Commerce/Statistics with a qualified UGC/ NET/ CAT/ AIMA/ XAT/ MAT score, or

Master's degree (M.E./M.Tech.) in Engineering with a qualified GATE score

2.3.10. Department of Instrumentation and Control Engineering

Bachelor's Degree in Engineering/ Technology in the appropriate branch of study and Master's Degree /M.E./M. Tech. in Instrumentation/Sensor System Design, Biomedical Instrumentation, Biomedical Signal/Image processing, Process Control, Cyber-physical systems, Cyber/networked control system and any emerging area of specialization related to Instrumentation and Control Engineering.

2.3.11. Department of Management Studies

Applicants with Two year full-time Master's degree in Business Administration/ Two year Post Graduate Diploma in Management/Masters' Degree in Industrial Engineering/Management with a CAT/ UGC-NET/ XAT/ MAT/ GMAT/ GATE score. Candidates with the above eligibility requirements and qualified doctoral research fellowships like UGC-JRF/RGNF/other equivalent research fellowships in Management may also apply.

2.3.12. Department of Mechanical Engineering

Applicants with B.E/B. Tech. in Mechanical Engineering with Master's in Design/Thermal/Industrial Safety streams.

2.3.13. Department of Metallurgical and Materials Engineering

Bachelor's Degree in Engineering/ Technology in the appropriate branch of study, PG degree in Science (Physics/Chemistry/Material Science/Applied Science/Applied Physics/Applied Chemistry) followed by M.Tech. Degree/M.S (by Research) in Material Science and Engg./equivalent PG degree in related discipline.

2.3.13.1. Centre of Excellence in Corrosion and Surface Engineering (CECASE)

Applicants with M.E. / M.Tech. in Metallurgical Engineering, Materials Science & Engineering, Welding Engineering, Industrial Metallurgy, Mechanical Engineering, Thermal Engineering, Manufacturing, Design, Automobile Engineering, Aeronautical Engineering, Nano Science & Nano Technology, Chemical Engineering, Electrical Engineering, Electronics Engineering, Instrumentation and Control Engineering or any other equivalent degree. The Ph.D. programme at CECASE is purely part-time.

2.3.14. Department of Production Engineering

Bachelor's and Master's / M.S. (by Research) degree in Engineering / Technology in the relevant branch of study.

2.3.15. Department of Chemistry

Masters' degrees in Chemistry/Applied Chemistry. Applicants having their own fellowships from funding agencies such as CSIR/ UGC – JRF/DST/DAE/NET/NBHM/INSPIRE, etc., can apply for Ph.D. in the department relevant to the research grant. Qualified GATE Score in Science streams should have been obtained.

2.3.16. Department of Mathematics

M.A./M.Sc. in Mathematics/ Applied Mathematics, M. Math /M. Stat. Applicants having their own fellowships from funding agencies such as CSIR/ UGC – JRF/DST/DAE/NET/NBHM/INSPIRE, etc., can apply for Ph.D. in the department relevant to the research grant. Qualified GATE Score in Science streams should have been obtained.

2.3.17. Department of Physics

Masters' degrees in Physics/Applied Physics/Materials Science/Applied Electronics with a qualified GATE score/ UGC/ CSIR/ NET score

M. Tech. in Non-Destructive Testing/Materials Science, with a qualified GATE score

P.3.0. Student Status

There are broadly two categories of Ph.D. registration – Full-time and Part-time, described as follows.

P.3.1 Full-time Research Scholar:

- a. Half-Time Research Assistantship (HTRA) Scholars:
A qualified GATE, or an equivalent National level test, score is mandatory for receiving fellowship.
This is the only category for the applicants through direct and integrated channels. The application should accompany a statement of purpose (SoP) and at least 2 Letters of Recommendation. These documents to be taken in a quantified manner for screening the application.
- b. Externally Funded Research Scholars
 - i. Fellowships for UGC/CSIR/DST/DAE/NBHM etc.
 - ii. Sponsored Research and Consultancy Projects with individual departments/faculty.
- c. Research scholars sponsored under the Quality Improvement Programme (QIP).
- d. Non-Stipendiary: A very small number (decided from time to time) of seats on completely self-finance basis, for exceptionally good students possessing relevant masters' degrees, may be available in the departments of Mathematics, Physics, Chemistry, and Humanities & Social sciences. There is no financial assistance available for these candidates.

For 3.1a, (Institute Stipendiary) The number of seats under this category in various departments, is as per the seat distribution matrix stipulated by the Ministry of Education (MoE). Candidates selected under this category will be called as either LATERAL (those already possessing masters' degrees), or DIRECT (those who have currently in their final semester of their B.E./B.Tech. (4 year)/B.Arch. (5 year) degree programme) or INTEGRATED (exceptionally outperforming applicants admitted through CCMT and currently completing their 1st year master program (M.Tech/M.Arch) of the institute (NIT-T only) with minimum CGPA of 8.5 upto 2nd semester i.e. $CGPA \geq 8.5$). All LATERAL, INTEGRATED and DIRECT candidates are admitted through the same process – screening, written-test* and interview, and they compete for the admission equally.

All the 17 departments of the institute admit candidates in this category, and selected candidates are eligible to receive the Half-Time Research Assistantship (HTRA). It is mandatory that the recipients assist the department academic work assigned by the Head of the Department and/or Research guide for at least 8 hours per week as per guidelines issued by the MoE; this is in addition to satisfying other conditions for the award/renewal of the fellowship. The award and renewal of the Assistantship is as per the guidelines prescribed by the ministry of education from time to time. At present, the fellowship is payable for a

maximum duration of 5 years or up to the thesis submission, whichever is earlier. All LATERAL, INTEGRATED and DIRECT candidates selected for admission under this category in the architecture, engineering and science departments are also eligible for the Prime Minister's Research Fellowship (PMRF). More details at <https://pmrf.in>

Further, there is a specific research stream, the DRDO (CAIR) -MHRD SCHEME, wherein the candidates selected in the departments of CSE, CA, EEE, ECE and ICE upon completion of the prescribed course work at NIT Tiruchirappalli have provision to pursue their research work, with the HTRA, in DRDO-Centre for Artificial Intelligence & Robotics (CAIR), Bangalore in their thrust areas of research.

For 3.1b (i) Other Fellowship: Having their own fellowships from funding agencies such as DST, NET, CSIR/ UGC - JRF, NBHM - JRF, IDRBT, etc., relevant to the research grant typically in the departments of Mathematics, Physics, Chemistry, Management, Humanities & Social Sciences. The number of seats is limited, and may vary from time to time based on selection and administrative procedures.

For 3.1c Other Fellowship: Research scholars sponsored under the Quality Improvement Programme (QIP), TEQIP, ICCR, etc.

For 3.1b(ii), (Project), Project Assistants/Associates/JRFs etc., working in sponsored research and consultancy projects under the faculty of NITT, and with a qualified GATE/UGC/CSIR/NBHM/NET/CAT/ATMA/XAT/MAT score. The number of seats is limited, and may vary from time to time based on availability of projects/grants with the departments/faculty.

P.3.2 Part-time Research Scholar:

- a. In-Service Internal Research Scholar
- b. In-Service External Research Scholar

For the category 3.2.a, Part-Time Internal In-Service research scholars

Part-Time (Staff): A limited number of seats are allotted for the employees of the Institute, subject to the necessary approval by the competent authority. Applicants to this category need to possess qualified GATE/UGC/CSIR/NBHM/NET/CAT/ATMA/XAT/MAT score obtained at some point of time in the past, in addition to possessing masters' degrees. Applicants for this category must submit a hard copy of the completed online application through proper channel. However, the selection procedure remains the same, i.e., screening of the application as per the norms mentioned above, followed by performance in the written-test* and interview.

For the category 3.2.b, Part-Time External In-Service research scholars

Part-Time (External-without Gate): A limited number of seats are available in all the 17 departments and the Center of Excellence in Corrosion & Surface Engineering (CECASE) for the working professionals, with masters' degrees, from Government and quasi-government R&D Organizations / Public sector having R & D facilities / National Research laboratories /Reputed industries/organizations (private sector/MNCs) having well-established R&D facilities. For applicants in this category GATE score is not mandatory, but they must be working in establishments equipped with necessary research and library facilities only shall be considered for admission under this category.

A committee appointed by the Director (consisting of Dean Academic or his nominee, Dean-R&C or his nominee and Head of the Department) shall assess the adequacy of these facilities before recognizing the organization for the above purpose. However, the applicants must be officially sponsored by their employing organization. The candidate should have at least 3 years' experience in a regular/permanent position at the time of application. The industries/organization must have at least 5 years of its existence for patronizing candidates to part-time Ph.D. program.

The minimum residential requirement for candidates under Part-time (External- without Gate) category for undertaking course work is as follows, a) The residential requirements shall be waived, b) The scholar shall report to the research supervisor /DC at least on three different occasions in every semester for official discussions and c) The scholar's visits to the department may be scheduled during summer / winter vacations, but only on institute working days.

Applicants to the external registration programme must provide detailed information about the research facilities available at his/her organization and a certificate from the employer that these would be available to him/her for carrying out research. He/she should also provide the bio-data of the prospective Co-Supervisor or Research Coordinator who would coordinate the candidate's work at his/her organization with the principal supervisor at NIT Tiruchirappalli.

The Part-Time external category 3.2.b (Part Time-On campus) is also available for faculty members and working professionals, with masters' degrees from Govt./Govt. Aided/Reputed Private Engineering Colleges/Science and Arts Colleges/Universities/Industry/Public sector organization. Regular/Full-time teachers/ employees working in these institutions having qualified in GATE/UGC/CSIR/NBHM/NET/CAT/ATMA/XAT/MAT will be considered for admission under this category. At the time of admission, the candidate must submit a "no objection" certificate and also a "relieving certificate" from the Parent institute/organization to relieve him/her to complete his/her residential requirement of one semester to complete the mandatory course work. The candidate should have at least 3 years' experience in a regular/permanent position at the time of application. The college/organization must have at least 5 years of its existence for patronizing candidates to part-time Ph.D. program.

•There is no stipend/fellowship for the candidates selected under categories 3.2 a & b, i.e., Part-Time Internal and Part-Time External. These programmes are completely self-financed.

P.4.0 Selection Procedure

P.4.1 For all categories of the PhD programme, the mode and norms for selection shall be uniform. Following the scrutiny and short-listing of the applications, eligible candidates will be called to attend a written test.

P.4.2 Candidates, short listed based on the performance in written test* need to appear for a technical and personal interview conducted by the Departmental Research Committee comprising of HoD, all members of the faculty and the Dean's nominee (observer). The merit list for all the candidates (following the reservation policy of the GoI wherever applicable) is based on the cumulative scores obtained in their UG/PG programmes, awards/prizes, publications and work experience (if any) and the performance in the personal interview.

*the conduct of written will be decided from time to time

P.5.0 Admission

- P.5.1** Institute PhD admission committee constituted by the Chairperson, Senate will recommend Candidates for the admission.
- P.5.2** The research scholar should also pay fees every semester until the submission of thesis as prescribed by the Institute to keep the registration active.
- P.5.3** A research scholar is not eligible for re-registration for Ph.D. after cancellation of his/her earlier registration.

P.6.0 Duration of Programme

The duration of the programme for all categories and the timeline for submission of the thesis are counted from the date of provisional registration.

The minimum duration of the direct, integrated & lateral Ph.D. Programme prescribed is three years (from the date of PhD registration (direct, lateral) to submission of synopsis and for integrated PhD: three years will be calculated from the date of M Tech registration) for all categories. For direct & lateral full-time students with HTRA/external funding the permitted duration is up to a maximum of 6 years, and for part-time students it is up to a maximum of 7 years.

Under extraordinary circumstances, based on the recommendations of the doctoral committees, extension of duration may be considered. Nevertheless, at the end of 8 years from the date of provisional registration, no further extension will be given and the registration to the Ph.D. programme stands cancelled.

It must also be noted that for full-time research scholars, the HTRA is available for 5 years only, and for the externally funded students fellowship is available till the project is completed, which is usually 2-3 years; no financial assistance is available thereafter.

Direct and Integrated candidates alone will get two degrees – M. Tech. & Ph.D. after successful completion of all requirements. Direct and Integrated PhD admitted students can appear for campus placements only upon submission of PhD thesis

- P.6.1** Full-time research scholars, upon successful completion of minimum residential period of two years and qualifying in the comprehensive examination may request the chairperson of the Senate / Dean (Academic) to convert their status to part-time research scholars. The conversion of status is subject to the approval by competent authorities.

If the research scholar leaves the institute without satisfying the above conditions, the registration shall be cancelled.

In case of employment, a “no objection certificate” (NOC) from the employer should be submitted along with DC recommendation with proper justification immediately. Else the registration shall be cancelled.

P.7.0 Choice of Guide

- P.7.1** Allotment of research scholars to guides will be made by the Head of the Department taking into consideration the areas of research of the eligible guides in the department and the preferences of the research scholars.
- P.7.2** Research scholars admitted under Part-time External(without Gate) category (P.3.2b. from Government and quasi-government R&D Organizations / Public sector having R & D facilities / National Research laboratories /Reputed industries/organizations (private sector/MNCs) having well-established R&D facilities) will normally carry out part or all of his/her research work in their respective industry/ organization/ national laboratories/ employing the scholar. For these scholars, there will be one principal guide from NIT Tiruchirappalli and one external co-guide/ research coordinator from their organization.
- P.7.3** For the research scholars admitted under Part-time External: on campus (P.3.2b from Govt./Govt. Aided/Reputed Private Engineering Colleges/Science and Arts Colleges/Universities/Industry/Public sector organization) category, place of work is NIT-Tiruchirappalli even though they may be carrying out a part of work in their College/ Institution. For these scholars, NIT-Tiruchirappalli faculty shall be the principal guide.
- P.7.4** There shall not be more than two guides (including the co-guide) for a research scholar.

P.8.0 Guideship

- P.8.1** All faculty members of the Institute holding doctorate degree and having a minimum of 2 papers published/ accepted in peer refereed journals are eligible to guide Ph.D. scholars. For Part-time External(without Gate) category (P.3.2b. from Government and quasi-government R&D Organizations / Public sector having R & D facilities / National Research laboratories /Reputed industries/organizations (private sector/MNCs) having well-established R&D facilities) the external co-guide should have a Ph.D. degree and a minimum of 2 papers published/ accepted in peer refereed journals; if the candidate opts for a research coordinator he/she should have a PG degree and at least ten years of experience. The principal guide shall be from among the faculty of NIT Tiruchirappalli from the department of the research scholar. The allotment of student to retiring faculty shall be avoided, if retirement period of faculty is less than the minimum duration of the Ph.D. Programme.
- P.8.2** At any point of time, each eligible research supervisor shall not have more than 4 full-time HTRA Ph.D. Scholars, and not more than 8 scholars from categories 3.1b, 3.1c, 3.1d and 3.2, other than full-time HTRA. Put together, a research supervisor shall not have more than 12 research scholars at any point of time. However, any specific request for additional (beyond the stipulated 8) Ph.D. scholar, under sponsored research projects category only, may be considered by a committee duly appointed by the chairperson of the Senate.
- P.8.3** In a given academic year, a research supervisor shall not be assigned more than two HTRA research scholars.
- P.8.4** Eminent professionals working in reputed research Organizations/ MNCs having R&D

units in India/ National laboratories/ Government/ Quasi Government R&D Departments may be approved by chairman senate as eligible co-guides provided they continue to be in service throughout the period of Ph.D. for the candidate.

P.8.5 Continuance of retired faculty members as guide

When a faculty member, who has guided a research scholar for 3 years, retires, he will be permitted to continue as guide on his written request, and will be invited for the DC meetings without any financial commitment to the Institute. But TA and DA limited to II class AC train fare, will be paid within India to attend the synopsis meeting and the Viva-voce examination. However, a co-guide will be allotted to provide administrative/ research support for the scholar.

P.8.6 The CSIR and other Emeritus Fellows/ Scientists who hold office at this Institute for a period of 3 years and more can take fresh students during their period of appointment as Emeritus Scientists only with financial support for the research scholar from other sources along with another Guide who has at least 3 years' service still left at the Institute.

P.8.7 Emeritus Fellows/ Professor Emeritus will be allowed to continue their guidance of Ph.D. scholars till their tenure.

P.8.8 Any Guide-in-charge, who has acted for more than one year during the absence of the guide allotted to the research scholar, will be a special invitee/ co-opted member of the Doctoral Committee when the original Guide takes over.

P.8.9 External co-guides will be invited to attend Doctoral Committee meetings, Synopsis meeting, and Viva- Voce examination, TA/ DA will be provided as per institute norms.

P.8.10 Change of Guide/ Addition of Co-Guide

Research scholars may request the Chairperson of the Senate through the Dean (academic) for a change of guide or add a Co-Guide (subject to the regulation P 8.1) for valid reasons (if any, after DC formation). The Chairperson of the Doctoral Committee (DC) or his nominee shall convene the Doctoral Committee and based on its recommendations, the request shall be considered by the Chairperson, Senate.

P.9.0 Doctoral Committee

P.9.1 The following is the composition of the Doctoral Committee (DC)

1.	Chairperson	One Professor from the institute to be nominated by the Research Guide
2.	Member	Research Guide
3.	Member	External co-guide (only External-without GATE category)/ Internal co-guide if any
4.	Member	One faculty member from the same department nominated by the Chairperson Senate / Dean (Academic) from the panel of names suggested by guide
5.	Member	One faculty member from an allied department nominated by the Chairperson senate / Dean (Academic) from the panel of names suggested by guide

6.	Member	One external member from Industry/ Research establishment/ Academic institution (or) One faculty member from the same department to be nominated by the Chairperson senate / Dean (Academic) from the panel of names suggested by guide (optional) (Each panel consisting of two members for item Nos. 4, 5, & 6. If external member is not suggested, provide a panel consisting of three members for item No.4)
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P.9.2 The HOD will intimate to the Dean (Academic) the area of research, name(s) of the Guide and a panel of names suggested by the guide for the DC for each research scholar, within one week of the date of joining of the research scholar.

P.9.3 In case any member of the DC (including the chairperson) goes on long leave, or resigns or retires from the Institute, the Chairperson of the Senate / Dean (Academic) will nominate another member based on the suggestion made by the guide.

P.9.4 External members may be permitted to participate in the conduct of DC meetings through video conferencing.

P.10.0 Registration

The date of commencement of PG classwork that follows the admission process shall be considered as the date of registration for the PhD programme for each scholar.

The DC of every scholar shall meet, for the first time, within a week of its constitution to discuss the proposed research topic and prescribe the appropriate courses of study. The external member need not be present for the first DC meeting.

P.11.0 Course Work

P.11.1 All the lateral full-time & part time research scholars should successfully complete, preferably within one semester but not later than a year from the date of registration, at least four courses (from a list of six theory courses recommended by the Doctoral Committee).

P.11.2 Ph.D. scholars shall attend classes along with PG students and will be evaluated in the same relative grading scale.

P.11.3 PG level theory courses are prescribed to Ph.D. scholars irrespective of the Department they belong to and credit may be given as per usual evaluation procedure. But such courses should not have been taken by the research scholar in their Post Graduate programme.

P.11.4 Courses may also be prescribed from those offered by Departments other than that in which the research scholar is registered. No change in courses prescribed shall be made without the approval of the DC. It shall, however, be open to the DC to prescribe additional courses whenever found necessary.

P.11.5 For the convenience of Part-Time (External-without GATE) students (3.2b, from Government and quasi-government R&D Organizations / Public sector having R & D facilities / National Research laboratories /Reputed industries/organizations (private sector/MNCs) having well-established R&D facilities) alone the course work requirement can be considered to be fulfilled either by undertaking to study the courses at NIT Tiruchirappalli or by taking online courses offered under reputed agencies such

as NPTEL which are approved by the Doctoral Committee. After completion of online courses (after certification), the evaluation will be facilitated / carried out by the research supervisor along with DC at NIT Tiruchirappalli.

P.11.6 Courses completed after the date of registration (direct and lateral) will only count towards the requirements of award of Ph.D. degree.

For direct candidate: The number of credits required shall be similar to the number credits required for earning M-Tech/M-Arch degree. Typically, the course work is expected to be completed in the first year. (course work subjects will be decided by DC)

For integrated candidate: no separate course work for integrated candidates, the coursework completed at their PG program will be considered as course work

During 2nd year (direct and integrated), the student shall commence preliminary research work as a short-term project. There shall be evaluations by the DC at the end of 3rd and 4th semesters similar to M-Tech/M-Arch degree.

There will be a pre-comprehensive examination to review the research work done during at the end of 2nd year and assess the student's potential for continuing the PhD program. At this point, the student shall have an option to exit the program with an M-Tech / M-Arch degree with relevant M-Tech / M-Arch specialization offered in the respective department.

At the beginning of 5th semester (Direct and Integrated candidates), the students would be merged with the (lateral) regular PhD students in their 3rd semester, i.e., Appearing for comprehensive examination, Research work leading to publications etc. For more detail about semester plan, please refer appendix-1

P.11.7 Research scholars admitted to the programme shall obtain an overall grade (Any 4 courses with higher grade is taken for overall grade calculation only for lateral candidate) not less than B (CGPA ≥ 8.0) in their course work (direct, integrated & lateral) and short-term projects (direct and integrated PhD candidates alone) with each course and short-term project not having grade less than C.

P.11.8 Research scholars (lateral), who fail to satisfy the grade requirement, may attempt other prescribed courses or rewrite (end semester reassessment-only once) the examination in the course(s) where they had scored less than C. If they still fail, their registration stands cancelled.

P.11.9 For students from Direct and Integrated admissions, course work (core, electives, laboratory and short term projects) shall be mentioned under relevant M-Tech / M-Arch programmes. However, the DC may recommend additional course work (beyond 2 years) if the research work demands. The students have to undergo these courses as well. These course work (beyond 2 years) shall be mentioned under PhD program.

P.12.0 Progress Report

P.12.1 All research scholars should report to the department on a daily basis and sign in the attendance register. They are entitled to availing leave as per MHRD/ GOI guidelines with the consent of guide and HoD.

P.12.2 All the research scholars must necessarily undergo progress review and assessment periodically, once in every semester up to sixth and twice a semester thereafter. HoDs shall forward the progress reports of the scholars to the O/o Dean, Academic in time.

P.12.3 The doctoral committee reviews the case and either recommends the course of action for the submission no later than the end of 6th year (12th semester), or recommends the cancellation of registration.

P.13.0 Comprehensive Examination

P.13.1 On the successful completion of the prescribed course works, the research scholar shall undergo a qualifying Comprehensive Examination, usually in the beginning of his/her 3rd semester but not later than two years from the date of registration for lateral candidate and beginning of his/her 5th semester not later than three years from the date of registration for direct and integrated candidates (M.Tech. registration date). This examination is to rigorously assess the scholar's understanding and knowledge in the topics related to the broad field of the discipline (e.g., electrical engineering) as well as assess his/her strengths and weaknesses in the chosen research problem. The metrics on which the candidates will be judged include (but not restricted to) grades in the course work,

a strong research proposal, publications, if any.

P.13.2 The composition of the Comprehensive Viva-Voce Board shall be as follows:

- i. HoD/ HoD's nominee
- ii. One External member - Professor/ Associate Professor from IIT/ IISc/ IIM/ NIT/ Anna University/ School of Planning and Architecture/ JNAFAU/ Central Universities or Scientists/ Scientific Officers holding Ph.D. degree and drawing the scale of Professor and above, working in National and Regional laboratories, Defense Research Organizations, Atomic and Space Research Organizations.
- iii. Chairpersons and members of the doctoral committees of the research scholars.

The External Member for comprehensive Viva-Voce Board shall be nominated by the Chairperson, Senate / Dean (Academic) from a panel suggested by the Head of Department in consultation with the Guides.

The Comprehensive Examination shall have a written examination (of at least one-hour duration) followed by an oral examination. The written part is expected to be rigorously assessing the scholar's thoroughness in the fundamentals of the broad field of research, while the oral component focusses on the student's inclination and energy to conduct independent research. The Comprehensive Examination for all eligible research scholars registered during a particular session will be held at a particular period. The HOD of the department is expected to give an indicative syllabus for the written test about one month prior to the Comprehensive Examination.

P.13.3 Based on the result of the Comprehensive Examination, the comprehensive Viva-Voce Board shall report to the Dean (Academic) about the fitness of the research scholar to proceed further with his/ her Ph.D. work within two weeks from the date of the examination.

P.13.4 If, based on the results of the Comprehensive Examination, a research scholar is not approved by the Comprehensive Viva-Voce Board, the guide may prepare him for a re-

examination within the next six months. If the student's performance is not satisfactory in the re-examination too, the registration to the PhD programme stands cancelled.

P.14.0 HTRA Enhancement

The research scholar is eligible for stipend enhancement at the end of 4 semesters from the date of registration upon fulfilling the following conditions:

- i. The successful completion of Comprehensive examination, and
- ii. At least one publication in a journal (accepted in a relevant journal as described in P.16.1)

P.15.0 Temporary Break from Ph.D. Programme

Full time Ph.D. scholars who completed their course work can be permitted to take a temporary break from the programme for a period up to one year on medical grounds and personal tragedies, with the recommendation of the DC and the approval of the Dean (Academic). However maximum Duration of Programme will not change (P.6.0).

P.16.0 Synopsis of Thesis

P.16.1 On satisfactory completion of the prescribed courses, qualifying in the Comprehensive Examination, and getting required number of publications accepted in his/ her research area, the research scholar shall be permitted to present and submit the synopsis of his/her research work. Prior to this, the scholar should have presented at least 2 seminars related to his/her research field (1st seminar talk may be delivered preferably after 1st journal paper acceptance/publication, similarly 2nd seminar talk preferably after 2nd journal paper acceptance/ publication). At least 2 publications in reputed and indexed (Web of Science Core Collection*: SCI, SCIE, ESCI, SSCI, AHCI or Scopus) journals are mandatory before the presentation and submission of the synopsis. Publications in paid journals and journals publishing the conference proceedings shall not be considered. DC must ensure this during the synopsis meeting.

*<https://mjl.clarivate.com/>

P.16.2 A DC meeting will be held in the office of the Dean (Academic) for Synopsis presentation. Following the presentation, the guide shall submit the synopsis document (and other documents to be filled in by the scholar) to the O/o Dean (Academic), along with a panel of Indian and foreign examiners, in consultation with the members of the doctoral committee for thesis evaluation.

P.16.3 The following guidelines should be followed while recommending the panel of examiners (three from India and three from Abroad).

- Indian Examiner: At least two examiners from IIT/ IISc/ IISER/ IIM/ NIT. Others may be from State & Central Government funded Universities/ Institutions and centrally funded research institutes. The examiner(s) should have at least 5 years of Post-Ph.D. experience.
- Foreign Examiner: Should be from research institute/Universities. At least one should be from Universities in USA/ UK/ Canada/ Australia/ Germany/ Japan/ Singapore. The examiner(s) should have at least 5 years of Post-Ph.D. experience.

P.16.4 The panel should not enlist examiner who had evaluated and sent a thesis report within last six months in the same Department and Co-authors of the papers for the particular research scholar.

P.17.0 Submission of Thesis

The research scholar shall submit two hard copies and one soft copy of thesis within three months from the date of submission of the synopsis. The scholar should also submit Plagiarism Report attested by the Research Supervisor that the plagiarism is less than 20% excluding scholar's publication while submitting the thesis. The Doctoral Committee may grant additional time beyond three months on request from the scholar for valid reasons.

P.18.0 Thesis Evaluation

P.18.1 The thesis shall be referred to two examiners (one overseas and one within India) chosen by the chairperson of the Senate from among the panel of examiners submitted by the Guide.

P.18.2 In case of undue delay i.e., beyond 45 days for receiving the evaluation report, after reminding the examiner, the Chairperson, Senate/Dean (Academic) shall appoint another examiner from the panel, for evaluating the thesis.

P.18.3 If an examiner suggests resubmission of the thesis, the research scholar will be allowed to submit the revised thesis within the time stipulated by the DC failing which lead to cancellation of his/her Ph.D. registration.

P.18.4 If one of the two thesis examiners declare the thesis as not acceptable, the thesis shall be referred to a third examiner (decided by the Chairperson, Senate) from the panel for evaluation. After referral to a third examiner, declaring the thesis as 'accepted', the DC will consider the reports and recommend for conduct of oral examination which will be conducted normally not earlier than two weeks from the date of the constitution of the Oral Examination Board (Under extraordinary situations, the chairperson, senate may permit a scholar to defend his/her thesis in a viva-voce examination before the stipulated notice period of two weeks). If the third examiner reports the thesis as not acceptable, the registration of the scholar shall stand cancelled.

P.19.0 Viva-Voce Examination

After the reports from the examiners on the submitted thesis were received, the scholar must defend his research work in a public viva-voce. A viva-voce board will examine the scholar in an oral presentation of his/ her thesis work and will ensure that the scholar answers satisfactorily the clarifications and questions raised by the thesis examiners.

P.19.1 The following is the composition of the public Viva-Voce Examination Board:

- i. Chairperson - Chairperson of Doctoral Committee
- ii. Member - Research Guide
- iii. The Indian examiner of the thesis; in case the Indian examiner is not available on the proposed dates, a specialist in the subject may be nominated by the chairperson of the Senate / Dean (Academic) from the panel of examiners approved by the DC.

P.19.2 If the Viva-Voce Examination Board declares that the questions raised by the examiners are not clarified by the research scholar, he/ she may be asked to reappear for Viva- Voce examination at a later date, not earlier than a month and not later than six months from the date of the first oral examination. For the reappearance, the Viva-Voce Examination Board will include the members of the DC.

P.19.3 The Chairperson, DC shall forward the report of the Viva-Voce Examination Board along with the thesis incorporating the suggested corrections from examiners to the Dean (Academic).

P.19.4 In Exigency, an examiner may be permitted by the Chairperson, Senate to participate in Viva Voce proceedings through video conferencing mode.

P.20.0 Award of Ph.D. Degree

On recommendation of the Viva-Voce Examination board the research scholar will be awarded Ph.D. degree in the ensuing convocation.

P.21.0 Power to Modify

Notwithstanding all that has been stated above, the Senate has the right to modify any of the above Regulations from time to time.

Appendix-1**Suggested Time-line for Lateral PhD programme**

Semester 1	
Month	Activity
1	Admission, Guide Allocation, Formation of DC, DC Meet 1, Course work begins
2	Course work, periodic meeting with the guide
3	Course work, periodic meeting with the guide
4	Course work, periodic meeting with the guide
5	At least 75% course work to be completed
6	Begin Literature Review

Semester 2	
Month	Activity
1	DC Meet 2, Course work continues
2	Course work, periodic meeting with the guide
3	Course work, periodic meeting with the guide
4	Course work, periodic meeting with the guide
5	Course work to be completed
6	Consolidate Literature Review, Prepare for Comprehensive Examination

Semester 3	
Month	Activity
1	DC Meet 3,
2	Comprehensive Examination; candidate's performance may be unsatisfactory, and can be given another attempt in Semester 4
3	Begin submitting International Conf papers
4	Research work continues
5	Research work continues
6	Explore a review paper for a journal

Semester 4	
Month	Activity
1	DC Meet 4,
2	Research work and Plans for the first Journal paper
3	Progress Review Seminar in the Department
4	Research work continues
5	Research work continues
6	Research work continues

Semester 5	
Month	Activity
1	DC Meet 5,
2	Research work and Plans for the second Journal paper
3	Progress Review Seminar in the Department
4	Research work continues
5	Research work continues
6	Research work continues, Submit 2 nd conference paper

Semester 6	
Month	Activity
1	DC Meet 6,
2	Research work continues
3	Progress Review Seminar in the Department
4	Responding to reviewers' comments on journal papers
5	Research work continues
6	Ensure at least 1 paper is accepted for publication

Semester 7	
Month	Activity
1	DC Meet 7, to ensure submission of synopsis by semester-end
2	Research work continues
3	Progress Review Seminar in the Department
4	Responding to reviewers' comments on journal papers
5	Ensure at least 2 papers are accepted for publication
6	Submission of synopsis

Semester 8	
Month	Activity
1	DC Meet 8, to ensure synopsis is submitted and that the thesis would be submitted by semester-end
2	Research work continues
3	
4	Progress Review Seminar in the Department
5	Submission of thesis
6	

Semester 9	
Month	Activity
1	DC Meet 9, to review the delay beyond 4 years, and ensure submission of the synopsis and the thesis by semester-end
2	Research work/Journal paper revisions/Synopsis writing continues
3	Submission of synopsis
4	Thesis writing in progress
5	Submission of thesis
6	

Semester 10	
Month	Activity
1	DC Meet 10, with an external expert to be nominated by HoD and approved by Dean to seriously review the delay, and ensure submission of the synopsis and the thesis by semester-end
2	Submission of synopsis Submission of thesis
3	
4	
5	
6	

Suggested Time-line for Direct PhD programme

Semester 1	
Month	Activity
1	Admission, Guide Allocation, Formation of DC, DC Meet 1, Course work begins along with the relevant MTech/MArch specialization
2	Course work not less than Minimum Credit for the relevant courses (40 credits for MTech and 36 credits for MArch) comprises (a) Core courses of the relevant MTech/MArch specialization (b) Courses recommended by Doctoral Committee (c) Other Electives
3	
4	
5	
6	
Semester 2	
Month	Activity
1	DC Meet 2, Course work continues
2	Periodic meeting with the guide Commence Literature Review Course work to be completed
3	
4	
5	
6	
Semester 3	
Month	Activity
1	DC Meet 3, register for Research Methodology course
2	Continue Literature Review Commence preliminary research work as a short-term project Periodic meeting with the guide Evaluation of the Project for 12 credits in the presence of doctoral committee and external examiner
3	
4	
5	
6	
Semester 4	
Month	Activity
1	DC Meet 4,
2	Research work continues (short-term project)
3	At least 1 Conference paper to be presented, explore a review paper for a journal
4	
5	Evaluation of the Project for 12 credits in the presence of doctoral committee and external examiner
6	Exit option with MTech degree in relevant specialization
Semester 5	
Month	Activity
1	DC Meet 5,
2	Comprehensive Examination; candidate's performance may be unsatisfactory, and can be given another attempt in Semester 6
3	Begin submitting International Conf papers
4	Research work continues

5	Explore a review paper for a journal
6	Research work continues

Semester 6	
Month	Activity
1	DC Meet 6,
2	Research work and Plans for the first Journal paper
3	Progress Review Seminar in the Department
4	Research work continues
5	At least 1 Journal paper to be submitted
6	Research work continues

Semester 7	
Month	Activity
1	DC Meet 7,
2	Research work and Plans for the second Journal paper
3	Progress Review Seminar in the Department
4	Research work continues,
5	At least 2 nd Journal paper to be submitted
6	Research work continues, Submit 2 nd conference paper

Semester 8	
Month	Activity
1	DC Meet 8,
2	Research work continues
3	Progress Review Seminar in the Department
4	Research work continues
5	Research work continues
6	Ensure at least 1 paper is accepted for publication

Semester 9	
Month	Activity
1	DC Meet 9, to ensure submission of synopsis by semester-end
2	Research work continues
3	Progress Review Seminar in the Department
4	Research work continues
5	Ensure at least 2 papers are accepted for publication
6	Submission of synopsis

Semester 10	
Month	Activity
1	DC Meet 10, to ensure synopsis is submitted and that the thesis would be submitted by semester-end
2	Research work continues
3	Progress Review Seminar in the Department Submission of thesis
4	
5	
6	

Suggested Time-line for Integrated PhD programme

Semester 1 (PG level course already over)	
Month	Activity
1	Course work not less than Minimum Credit for the relevant courses with each course not having grade less than C
2	
3	
4	
5	
6	

Semester 2 (PG level course already over)	
Month	Activity
1	Course work not less than Minimum Credit for the relevant courses with each course not having grade less than C (minimum CGPA of 8.5 upto 2nd semester i.e. CGPA \geq 8.5)
2	
3	
4	
5	
6	

Semester 3	
Month	Activity
1	Integrated PhD Admission, Guide Allocation, Formation of DC, DC Meet 1, Short term project begins along with the relevant MTech/MArch specialization DC Meet 1, register for Research Methodology course
2	Continue Literature Review Commence preliminary research work as a short-term project Periodic meeting with the guide Evaluation of the Project for 12 credits in the presence of doctoral committee and external examiner (not having grade less than C)
3	
4	
5	
6	

Semester 4	
Month	Activity
1	DC Meet 2,
2	Research work continues (short-term project)
3	At least 1 Conference paper to be presented, explore a review paper for a journal
4	
5	Evaluation of the Project for 12 credits in the presence of doctoral committee and external examiner (not having grade less than C) Exit option with MTech degree in relevant specialization
6	

Semester 5	
Month	Activity
1	DC Meet 3, candidate should obtain an overall grade not less than B (CGPA \geq 8.0) in their course work (M Tech level courses completed before joining Integrated PhD) and short-term projects with each course and short-term project not having grade less than C.

2	Comprehensive Examination; candidate's performance may be unsatisfactory, and can be given another attempt in Semester 6
3	Begin submitting International Conf papers
4	Research work continues
5	Explore a review paper for a journal
6	Research work continues

Semester 6	
Month	Activity
1	DC Meet 4,
2	Research work and Plans for the first Journal paper
3	Progress Review Seminar in the Department
4	Research work continues
5	At least 1 Journal paper to be submitted
6	Research work continues

Semester 7	
Month	Activity
1	DC Meet 5,
2	Research work and Plans for the second Journal paper
3	Progress Review Seminar in the Department
4	Research work continues,
5	At least 2 nd Journal paper to be submitted
6	Research work continues, Submit 2 nd conference paper

Semester 8	
Month	Activity
1	DC Meet 6,
2	Research work continues
3	Progress Review Seminar in the Department
4	Research work continues
5	Research work continues
6	Ensure at least 1 paper is accepted for publication

Semester 9	
Month	Activity
1	DC Meet 7, to ensure submission of synopsis by semester-end
2	Research work continues
3	Progress Review Seminar in the Department
4	Research work continues
5	Ensure at least 2 papers are accepted for publication
6	Submission of synopsis

Semester 10	
Month	Activity
1	DC Meet 8, to ensure synopsis is submitted and that the thesis would be submitted by semester-end
2	Research work continues

3	
4	Progress Review Seminar in the Department
5	Submission of thesis
6	