

# Ph.D. Regulations

**Operative for the Students admitted on or  
after July-2012**



**NATIONAL INSTITUTE OF TECHNOLOGY  
TIRUCHIRAPPALLI – 620 015, TAMILNADU, INDIA.**

## Ph.D. REGULATIONS

### P.1 Introduction

- a. The Regulations govern the conditions for imparting courses of instructions, conduct of the examinations and evaluation of students' performance leading to Ph.D. Degree. These Regulations are effective for the batches of students admitted from the academic session 2012-2013 and onwards.
- b. Doctoral Programme leading to Ph.D. is offered in the following Departments of the Institute:
  1. Department of Architecture
  2. Department of Chemical Engineering
  3. Department of Chemistry
  4. Department of Civil Engineering
  5. Department of Computer Applications
  6. Department of Computer Science and Engineering
  7. Department of Electrical and Electronics Engineering
  8. Department of Electronics and Communication Engineering
  9. Department of Humanities
  10. Department of Instrumentation and Control Engineering
  11. Department of Management Studies
  12. Department of Mathematics
  13. Department of Mechanical Engineering
  14. Department of Metallurgical and Materials Engineering
  15. Department of Physics
  16. Department of Production Engineering
  17. Department of Energy, Environment, Safety and Health
- c. 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.
- d. Notwithstanding any of the Clause(s) provided in the Regulations, the Senate shall exercise its powers to change/amend/interpret/implement decisions and actions concerned with academic matters.
- e. The Board of Governors of the Institute may, on the recommendation of the Senate, change any or all parts of these Regulations at any time.

### P.2 Student Status

There shall be provision for 2 categories of registration to the candidates willing to register for Ph.D.

1. Full-time: Students who are willing to pursue Research studies on full-time basis.
2. Part-time
  - i. Faculty of NITT
  - ii. Part-time Ph.D. programme is offered for working professionals from Govt. R&D Organizations / Public sector/ Industries/National Research laboratories and for faculty members from Govt. / Govt. aided / Private Engineering/ Science and Arts Colleges/ Universities.
    - a) **Part-time (External):** Candidates working in reputed industry/organization having R & D facilities, Govt. R&D Departments / National Research Laboratories / Units of Government / Quasi Government/ Public sector are considered under this category. The candidates must be officially sponsored by their employing organization. A candidate working in an establishment which is equipped with the 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) in addition to members of Departmental

Administrative Council shall assess the adequacy of these facilities before recognizing the organization for the above purpose.

At the time of application the employer must expressly undertake to pay full salary to the candidate and relieve him/her to complete his/her residential requirement. A candidate applying for admission 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 supervisor (External guide) or Research Coordinator who would supervise/ co-ordinate the candidate's work at his/her organization.

- b) **Part-time (on Campus):** Regular/ Full-time teachers/employees working in Govt./Govt. aided/ private Engineering/Technology colleges or Science and Arts Colleges/ Universities/ industry/ public sector organization are considered under this category. At the time of application, the candidate must submit a “no objection” certificate and also a ‘relieving certificate’ from the Parent College/ organization to relieve him/her to complete his/her residential requirement. The candidate should have at least three 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. The Departments concerned would decide the candidature of the selected candidates, after thorough discussion and analysis in DAC.

### **P.3 Educational Qualifications**

#### **I. Faculty of Engineering**

Bachelor’s and Master’s Degree in Engineering / Technology in the appropriate branch of study with a minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission under OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates.

#### **For Metallurgical and Materials Engineering Department**

Candidates with PG degree in Science (Physics / Chemistry / Material Science/ Applied Science / Applied Physics / Applied Chemistry) followed by M.Tech. Degree in Material Science and Engineering / equivalent PG degree in related discipline are also eligible to apply.

#### **II. Faculty of Architecture**

Bachelors degree in Architecture / Planning and Master’s degree in Architecture / Design / Planning / Building Engineering and Management / Building Technology or its equivalent with a minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission under OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates.

#### **III. Management Studies**

Master’s degree in Business Administration with minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission under OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates. A valid NET/UGC/CAT/AIMA is required for full-time candidates.

Master’s degree in Industrial Engineering / Industrial Management with minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates.

#### **IV. Computer Applications**

Master's degree in Computer Applications or M.Sc. (Computer Science/ OR&CA) with a minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission for OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates. A valid GATE/NET/UGC/CSIR/NBHM is required for full-time candidates.

Master's degree (M.E. /M.Tech.) in Computer Science and Engineering with a minimum 60% aggregate marks (CGPA 6.5/10) in UG or PG for admission under OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates.

#### **V. Faculty of Science & Humanities (Maths/ Physics/ Chemistry/Economics and English)**

Master's degree in Sciences / Humanities / Social Sciences/Economics in the relevant discipline with a minimum 60% aggregate marks (CGPA 6.5/10) for OC / OBC category and 55% aggregate marks or equivalent CGPA of 6.0 is the eligibility requirement for SC/ST candidates. A valid GATE/UGC/CSIR/NBHM/NET is required for full-time candidates.

#### **P.4 Selection Procedure**

- a. Candidates recommended by the Departmental Selection Committee will be called by HODs to appear for an entrance test. Both full time and part time candidates will have a common written test.
- b. The candidates short listed based on the written test performance need to appear for a personal interview by the Departmental Research Committee comprising HOD, all eligible guides and the Senate nominee (observer). Considering the background experience, greater weightage may be given for the interview and other components (such as academic qualifications, research publications/patents, work experience, etc) and less weightage for the written test for **Part-time (External) candidates**.

#### **P.5 Admission**

- a. Candidates whose selection is approved by Director will be admitted to the Ph.D. Programme by paying the prescribed fees. The candidate should also pay fees every semester as prescribed by the Institute failing which registration will be cancelled.
- b. A candidate is not eligible for re-registration for Ph.D. after cancellation of his / her earlier registration.

#### **P.6 Duration of the Programme**

- a. A full-time candidate can submit the synopsis (after satisfying P.16) only after a minimum period of study of 24 months from the date of registration.
- b. Full-time candidates can leave the Institute for taking up jobs, only after submission of synopsis of the thesis.
- c. A part-time candidate can submit the synopsis (after satisfying P.16) only after a minimum period of study of 36 months from the date of registration.
- d. The maximum period to complete the programme is 6 years for full-Time candidates and 7 years for Part-time. However, Scholarship will be given up to 4 years for full-time candidates.

#### **P.7 Choice of Guide**

- a. Allotment of research scholars to guides will be made by the Head of the Department taking into consideration the areas of research of the department and the preferences of the research scholars and guides.
- b. The candidates admitted under Part-time (External) category 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 internal guide from NIT Trichy and one external guide/research coordinator from his organization.

- c. For the candidates admitted under Part-time (on Campus) category, place of work is NITT even though he/she may be carrying out a part of work in his/her College/Institution. For these scholars, NITT faculty shall be the internal (principal) guide.
- d. There shall not be more than two guides for a research scholar.

### **P.8 Guideship**

- a. All faculty members of the Institute holding doctorate degree and having a minimum of 2 papers in refereed journals are eligible to guide Ph.D. scholars. For Part-time (External) category, the external guide should have a Ph.D. degree and a minimum of 2 papers in refereed journals or the research coordinator should have a PG degree and ten years of experience. The internal guide shall be from among the full-time NITT faculty (of the particular department where the research scholar is admitted to). For the purpose of administrative expediency the internal guide shall be the principal guide.

- b. No Guide shall have more than four full-time Ph.D. scholars under NITT, excluding the candidates taken under sponsored projects, who are yet to submit the Synopsis of their Theses. The Guide can take candidates subsequent to the submission of Synopsis by the existing Scholars. The guides taking Ph.D. students for the first time, may take only one candidate at the first instant (In subsequent years, they can guide additional scholars within the limit of four scholars)

Eligible guides shall have not more than four part-time PhD scholars (in addition to four full-time PhD scholars), at a given time. Also, in a given session, not more than two part-time candidates shall be assigned to one guide. The number of candidates to be admitted under Part-time (on Campus) category may be restricted considering the willingness of all the eligible guides in the department to take part-time PhD students.

External guides: In addition to NIT faculty, eminent professionals working in reputed research Organizations/ Industrial units / R&D Departments / National Laboratories / Units of Government / Quasi Government may be recognized and empanelled as eligible guides (external) in specific areas of specialization/ for interdisciplinary research. These external guides / Research Coordinators should be in service throughout the period of Ph.D. guidance period.

- c. As the tenure of the Emeritus Fellow/Professor Emeritus will be for a period of one or two years only, they will be allowed to continue their guidance of Ph.D. scholars as per the existing rules applicable to Institute faculty members with less than 2 years service left for superannuation [P.8 (e)].
- d. Continuance of retired faculty members as guide:
  - i. When a faculty member, who has guided a candidate 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 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.
  - ii. However, there will be a co-guide for taking care of administrative, and to some extent, the research responsibilities, of the scholar.
- e. Faculty retiring within two years and CSIR/Emeritus Fellows as Research Guide:
  - i. If a faculty member is to retire within 2 years, and if he is allowed to guide any scholar, another faculty member, who is not likely to retire within 2 years, will be nominated as Co-Guide of the scholar at the time of registration itself. The retired faculty member will be informed of the DC meetings, and will be invited to attend the meetings without any financial commitment to the Institute. However, the retired faculty members who continue to be guides will be paid TA/DA, limited to II Class AC train fare, within India, to attend the Viva-voce examination.
  - ii. 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 candidates from other sources along with another Guide who has at least 3 years service still left at the Institute.

- iii. Any Guide-in-charge, who has acted for more than one year during the absence of the Guide allotted to the candidate, will be a special invitee / co-opted member of the Doctoral Committee when the original Guide takes over. The rest will be left to the discretion of the original Guide.
- f. External 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.9 Change-of guide/Addition of Co-Guide**

The Research scholar may request the Chairman, Senate, for a change of Guide or add a Co-Guide for valid reasons. The Chairman 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 Chairman, Senate.

### **P.10 Doctoral Committee**

- a. The HOD will intimate to the Dean (Academic) the area of research, name(s) of the Guide(s) 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.
- b. The following is the composition of the Doctoral Committee:
 

1. One senior faculty member from the Institute to be nominated by the Research guide	Chairman
2. Research guide	Member
3. Co-guide (if any)	Member
4. One faculty member from same or an Allied department nominated by the Chairman, Senate or his nominee from the panel of names suggested by Guide	Member
5. One external member from Industry/Research establishment/academia to be nominated by the Chairman Senate or his nominee from the panel of names suggested by Guide	Member
- c. In case the Chairman, DC or any member goes on long leave, resigns or retires from the Institute, the Chairman, Senate or Dean (Academic) will nominate another member on the suggestion of the guide.

### **P.11 Registration**

The DC will meet normally within a week of its being constituted, fix the date of registration for the Ph.D. programme, consider the proposed research topic and prescribe the courses of study. The external member need not be present for the first DC meeting.

### **P.12 Course Work**

- a. The full time research scholars should successfully complete four courses (of which, only one can be a directed study course) prescribed by the Doctoral Committee within one year (preferably in one semester for regular scholars) from the date of admission into the programme.
- b. Regularly offered PG electives should not be taken for Directed Study – the full-time Ph.D. scholar should rather wait to study along with PG students.
- c. In the case of PG subjects, the full time Ph.D. scholar will attend classes along with PG students and will be evaluated in the same relative grading scale.
- d. In the case of Directed Study subjects, details of contact classes shall be maintained in the attendance book. The evaluation pattern will be similar to that of PG subjects – cycle tests

and assignment evaluated in the Department and end semester examination conducted. However, for awarding grades, the absolute grading scale shall be followed.

- e. The minimum residential requirement for candidates under Part-time (External) category for undertaking course work is eight weeks. Four relevant theory courses at Master's degree level (as recommended by the DC) shall be taken by the scholar. The candidates may complete the course work during their mandatory stay of at least eight weeks which may be undertaken in maximum of four instances of two weeks each. The research scholars are permitted to undertake the course work under 'directed study' mode. The course work shall be completed within one and half years of provisional registration in the programme. Subsequent to the completion of course work, they can continue their research work in their respective industry/ institution. However, the scholar shall spend at least one week per semester on campus until the submission of synopsis.

For the candidates under Part-time (on Campus) category, the minimum residential requirement is one semester. Four relevant theory courses at Master's degree level (as recommended by the DC) shall be taken by the scholar. Normally the course work shall be undertaken during the residential period of one semester itself. The requirements relating to course work will be as per norms of full-time scholars. Subsequently, the scholars shall continue their research work on a part-time basis, through regular interaction with the guide. The scholar shall spend at least one week per semester on campus until the submission of synopsis.

- f. PG. level courses may also be prescribed to Ph.D. scholars irrespective of the departments they belong to and credit may be given as per usual evaluation procedure. But such courses should not have been taken by the candidate in their Post Graduate programme.
- g. 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.
- h. Courses completed after the date of registration will only count towards the requirements of award of Ph.D. degree.
- i. Research scholars admitted to the programme shall obtain at least an overall average B grade in their course work with a minimum of C grade in any individual course for successful completion of the courses prescribed.
- j. If the DC desires that the scholar should take more than 4 courses, then the credits of the extra courses need not be taken for calculating the average grade.
- k. Candidates who fail to satisfy the grade requirement, may attempt other prescribed courses or rewrite (once) the examination in the subject(s) where they had scored less than C. If they still fail P.12. (i), their registration will be cancelled.

### **P.13 Progress Report**

- a. Research scholars shall sign the attendance register on all working days. They are eligible for a total of 15 days leave every semester and subject to a total maximum of 30 days in a year, which they can avail after obtaining the HOD's permission.
- b. A research scholar shall submit a written report of work done by him/her in the prescribed proforma to the Guide who shall forward it to the DC within two weeks before the end of each 12 months period from the date of registration up to first 2 years and before the end of each 6 months period beyond 2 years.
- c. A research scholar shall appear before the DC once a year for the first 3 years and once a semester thereafter for progress evaluation.

- d. Progress evaluation meetings of the DC will be convened by the Chairman, DC in April (for research scholars admitted in July semester) and in November (for research scholars admitted in January semester) to assess the progress in his/her research work and recommend renewal of scholarship/Part time Teaching / Research Assistantship / registration wherever applicable. If the progress of the research scholar continues to be unsatisfactory, the DC can recommend the cancellation of registration.

#### **P.14 Comprehensive Examination**

- a. On the successful completion of the prescribed course work, about one year from the date of registration, the candidate shall undergo a qualifying Comprehensive Examination to test his/her background knowledge in the broad area of specialization.
- b. The Comprehensive Examination will cover the topics in the discipline and all the allied areas. The Comprehensive Viva – Voce Board shall be common for all candidates of a given department. The composition of the Comprehensive Viva Voce Board shall be as follows:
1. All internal members of the Doctoral Committee in the given department
  2. One External member – Professor / Associate Professor from IIT / IISc / IIM /NIT/ Anna University or Scientists/Scientific Officers holding Ph.D. degree and drawing the scale of Professor and above, working in National and Regional Research Laboratories, Defense Research Organizations, Atomic and Space Research Organizations
  3. Two senior members of the faculty from same or allied department/s
- c. The External Member for Comprehensive Viva Voce Board shall be nominated by the Chairman, Senate or Dean (Academic) from a panel suggested by the Head of the Department in consultation with the Guides.
- d. The Comprehensive Examination shall have a written examination (of at least one hour duration) followed by an oral examination. The Comprehensive Examination for all eligible candidates 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.
- e. Based on the result of the Comprehensive Examination, the Comprehensive Viva Voce Board shall report to the Dean (academic) about the fitness of the candidate to proceed further with his Ph.D. work, within two weeks of the date of the examination held.
- f. If, based on the results of the Comprehensive Examination, a candidate is not approved by the Comprehensive Viva Voce Board, then a grace period of up to a maximum of six months shall be given for reexamination. If found fit, the candidate shall be permitted to proceed with doctoral work. Otherwise, the candidate's provisional registration will be cancelled.

#### **P.15 Temporary break from Ph. D. programme**

Ph.D. scholars completing their course work can be permitted to take a temporary break from the programme for up to one year for valid reasons, with the recommendation of the DC and the approval of the Dean (Academic).

#### **P.16 Synopsis of Thesis**

- a. On satisfactory completion of the prescribed courses, the Comprehensive Examination, and the required publications in his/her research area, the research scholar shall submit four copies of the synopsis of his/her research work to the DC. Synopsis presentation and subsequent DC meeting to approve the panel of the examiners will be held in the presence of the Dean (Academic).



- b. Two seminar presentations, one seminar at the end of the second year and another one prior to submission of synopsis should be given by the Research Scholar. Publications should be in two journals [SCI, SCIE, journals with impact factor, other journals approved by the dept. (which are not paid journals)].
- c. The research scholar should present the synopsis before the DC. The DC will, if it approves the work reported in the synopsis, permit the research scholar to submit the thesis and recommend a panel of at least six thesis examiners (three from India and three from Abroad).

#### **P.17 Submission of Thesis**

- a. The research scholar shall, within three months of submission of the synopsis, submit four copies of thesis embodying the results of investigation, and also three copies of the Abstract of the thesis of about 400 words. On the recommendation of the Guide and Chairman, Doctoral Committee, an additional three months may be granted.
- b. The thesis submitted for the Ph.D. degree shall contain an account of the research work carried out by the scholar leading to the discovery of new facts or techniques or new correlation of facts already known (analytical and/or experimental and/or hardware oriented in nature), the work being of such quality that it makes a definite contribution to the advancement of knowledge.

#### **P.18 Panel of Examiners**

- a. The thesis shall be referred to two examiners with five years of post doctoral experience (one from overseas) chosen by the Chairman, Senate or Dean (Academic) from among the panel of examiners submitted by the Guide and recommended by the DC at its synopsis meeting.
- b. Each panel (one for Indian examiner and another for overseas examiner) should have at least three experts in the area of research. The following guide lines should be followed while deciding the panel of examiners.
  - i. Indian: At least one examiner from any I.I.Ts./I.I.Sc./IIMs. Others may be from Institutions like N.I.Ts./Anna University (Guindy Campus)/M.I.T. /Scientists from research institutes of national importance. The examiner(s) should have at least 5 years Post-Doctoral Experience.
  - ii. Foreign Examiner: Should be from research institutes /universities. At least one should be from universities in U.S.A/U.K. The examiner(s) should have at least 5 years Post-Doctoral Experience.
- c. If any of the examiners (Indian/Overseas) in the panel has been an examiner for any thesis submitted during the last year, his name shall be substituted by another one.
- d. Co-authors of the paper for the particular candidate should not be nominated as an examiner.

#### **P.19 Thesis Evaluation**

- a. The examiner is expected to send the report on the thesis within two months from the date of receipt of the thesis.
- b. In case of undue delay in receiving the evaluation report, the Chairman, Senate or Dean (Academic) shall appoint another examiner from the panel, for evaluating the thesis.
- c. If an examiner suggests resubmission of the thesis, after revision, the research scholar will be allowed to resubmit the thesis within the time stipulated by the DC failing which the revised thesis will not be accepted and his/her registration will be cancelled.
- d. If one of the two thesis examiners declares the thesis as not commended the thesis shall be referred to a third examiner from the panel for his evaluation. If the third examiner also reports the thesis as not commended the registration of the scholar shall stand cancelled.

- e. If reports of two examiners, (if necessary after referral to a third examiner) declare the thesis as ‘commended’, 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. The DC will suggest a panel for nomination of one member for Oral Examination Board.
- f. In all other cases, not covered by the above Regulations, the matter will be referred to the DC for consideration.

### **P.20 Viva Voce Examination**

- a. The following is the composition of the Thesis Viva Voce Examination Board:

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|--|----------|
| 1. Chairman of Doctoral committee  | Chairman |
| 2. Research Guide  | Member   |
| 3. Co-guide (if any)   | Member   |
| 4. The examiner of the thesis from Member within the country, or a specialist in the subject nominated by the Chairman, Senate or Dean (Academic) from the panel of examiners approved by the DC |          |
| 5. An external examiner - A Specialist nominated by the Chairman, Senate or Dean (Academic) from a panel outside approved by the DC.   |          |
| 6. The DC members of the Research Scholar concerned will be invitees to the Viva voce Examination  |          |

- b. The thesis viva voce Examination Board will examine the scholar on his/her thesis work and evaluate his/her performance as satisfactory or otherwise.
- c. If the thesis report of the viva voce Examination Board declares the performance of the research scholar as not satisfactory, 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). On the second occasion, the viva voce Examination Board will also include the members of the DC.
- d. If the thesis viva voce Examination Board on the second occasion also evaluates the performance of the research scholar as not satisfactory, the matter will be referred to the Senate for a decision.
- e. The viva voce Examination Board may also recommend revision to be made in the final version of the thesis after taking into consideration suggestions of the examiners who evaluated the thesis and the discussion at the oral examination. The Chairman of the viva voce Examination Board shall forward the thesis to the Dean (Academic) along with the report of the viva voce Examination Board.

### **P.21 Award of Ph.D. Degree**

If the performance of the research scholar in the viva voce Examination is satisfactory, he/she will be awarded Ph.D. degree on the recommendation of the Senate and with the approval of the Board of Governors of the Institute.

### **P.22 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.