

**Ph.D. PROGRAMMES IN  
ENGINEERING EDUCATION**  
*(Inter-disciplinary)*  
*Part-time/ Full time*

**CIVIL ENGINEERING**  
*Part-time/ Full time*

**PROSPECTUS**



**NATIONAL INSTITUTE OF  
TECHNICAL TEACHERS TRAINING AND RESEARCH**  
*(Ministry of Education, Government of India)*  
Taramani, Chennai – 600 113  
Telephone. (044) – 22545406 / 22545442  
E-mail: [casr@nitttrc.edu.in](mailto:casr@nitttrc.edu.in)/directoroffice@nitttrc.ac.in  
Website: <https://www.nitttrc.ac.in>

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## **1.0 ABOUT N.I.T.T.R., CHENNAI:**

### **1.1 INTRODUCTION:**

The National Institute of Technical Teachers Training and Research (NITTTR), Chennai is one of the four autonomous organizations under Ministry of Education, Department of Higher Education, Government of India. The Institute was primarily established with the aim of improving the quality of technical education in India. Established in 1964, this Institute has devoted itself to the training of teachers from Polytechnics and Engineering colleges in Southern Region comprising the four States of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu and the Union Territory of Pondicherry. The Institute has conducted a variety of long-term programmes such as Diploma in Technical Teaching (Dip. T.T.), Diploma in Science Teaching (Dip. Sc.T), Diploma in Teaching of English for Specific Purposes (Dip.TESP), Post Graduate Diploma in Teaching of Computer Science and Applications (PGDTCA), Bachelor of Technical Education (B.Tech.Ed.) and Master of Technical Education (M.Tech.Ed. and Master of Technology in Human Resource Development), Certificate in Professional Development for Engineering College Teachers, Advanced Certificate in Curriculum Design and Instructional Material Development for Overseas Teachers (Ad.Cert.CD & IMD), Certificate in Technical Teaching (Cert.T.T.) and Certificate in Educational Technology (Cert.E.T.)

Short courses of one to four weeks' duration are also conducted in the areas of demand identified every year. Curriculum Development, Instructional Materials Development, Educational Media Development, Computer Applications including Software Development and System-oriented projects, Educational Technology, Guidance and Counselling, Vocational Education and Training, Community Polytechnic Scheme are some areas of work added gradually over the last 40 years. Educational Research had a humble beginning in personal projects undertaken by individual members of the faculty but reached the level of a thrust area due to UNDP assistance in 1980s. Motivated teachers continued to pursue educational research under a subsidy scheme floated by this Institute. World Bank Assisted Project laid demands on this aspect of our institutional activities. A good number of teachers of Polytechnics and Engineering colleges and even members of the NITTTR faculty started showing keen interest in research. Thus the Institute reached the level of recognition by the University of Madras as a doctoral research Centre in the inter-disciplinary area of Engineering Education from April 1993.

To be the institute of repute, NITTTR, Chennai concentrates on maximizing our extraordinary strengths, depth and breadth in the areas of our expertise, a deeply held commitment to challenges, and a genuine desire to excel in Technical Education in the world. Through the National Mission on Education through Information and Communication Technology (NMEICT) during 2011-2014, NITTTR, Chennai offered ten web-based faculty development programmes. The Institute has been recognized by Anna University as a R&D Centre from December 2016. In addition to the routine continuing education programme, NITTTR, Chennai also offers Post Graduate Programmes in the areas of Infrastructure Engineering and Management, Electronics and Communication Engineering (Industry Integrated). and E-Learning Technologies. NITTTR, Chennai offers Doctoral research in the areas of Engineering Education and Civil & Environmental Engineering.

The country's teaching-learning environment has changed suddenly in the year 2020 due to the sudden outbreak of the Pandemic. There have been global changes as well, with MOOCs

and online Education taking the Centre stage. NITTTR, Chennai too expanded its wing to embrace online training. Pandemic did not stop our academic activities and we conducted online training programmes and empowered more than 1,20,000 teachers both in synchronous and asynchronous modes.

## **1.2 Ph.D. DEGREE PROGRAMME**

### **1.2.1 In Engineering Education (Interdisciplinary):**

NITTTR, Chennai is affiliated to the University of Madras for the Doctoral Degree Programme in Engineering Education (Inter-disciplinary).

**As the Ph.D. Programme of the Institute is affiliated to the University of Madras, all the rules and regulations prescribed by the University from time to time will apply to the candidates admitted into the Programme. (Regulations October 2021)**

### **1.2.2 In Civil Engineering:**

NITTTR, Chennai has been recognized as Research Centre by Centre for Research, Anna University from December 2016 for Department of Civil & Environmental Engineering.

**As the Ph.D. Programme of the Institute is affiliated to Anna University, all the rules and regulations prescribed by the University from time to time will apply to the candidates admitted into the Programme. (Regulation 2020)**

## **1.3 DEPARTMENTS AND CENTRES:**

- Department of Civil and Environmental Engineering
- Department of Computer Science and Engineering
- Department of Curriculum Development, Policy Planning and Coordination
- Department of Educational Media & Technology
- Department of Electrical & Electronics and Communication Engineering
- Department of Education
- Department of Mechanical Engineering
- Centre for Academic Studies and Research
- Centre for Educational Management & Applied Sciences
- Centre for Rural and Entrepreneurship Development
- Centre for International Affairs
- Resources Centre

## **1.4 RESOURCES AVAILABLE:**

### **1.4.1 Human Resources:**

The Staff of NITTTR, Chennai have excellent academic and industry background. The strength of the Institute lies in the diversity of experience combined with expertise in teaching and research. The faculties represent a variety of Engineering and other disciplines including Education, Educational Psychology, Educational Management and Rural Development.

#### Faculty members are:

- Training consultants for various national and international organizations.
- Educational planners to design need-based, user friendly, participant oriented courses and workshops.
- Instructional designers to design, develop, monitor and evaluate instructional processes for education and training.

#### Our supporting staff:

- Includes Administrative and Accounts Personnel, Technicians, and Production Personnel.
- Lend their experiences and contribute to the overall functioning of the Institute.

#### **1.4.2 Other facilities:**

##### (A) Hostels and Guest House:

- There are 2 Trainees Guest House located in the campus. Type A Trainees Guest House has facilities for accommodating 80 persons with shared rest rooms.
- Type B Trainees Guest House has accommodation facilities for 50 in single rooms with attached bath.
- There is also another International Guest House having 30 rooms with attached bath. 26 of these are air-conditioned.

##### (B) Auditorium:

The acoustically designed Dr APJ Abdul Kalam Auditorium has a seating capacity of 150. It is designed for conducting National Seminars, Enrichment Studies, Cultural Programmes and other academic and social activities.

##### (C) Social Centre:

The Social Centre in the Institute caters to the social and recreational needs of the trainees. It provides facilities for indoor games such as shuttle badminton, table tennis, carom and chess.

##### (D) Gym and Sports facilities:

A well-equipped fitness centre is available.

For sports, well-equipped outdoor Volley Ball court and high standard wood-floored Badminton courts are constructed for the use of all student, faculty and staff members of the Institute.

## **2.0 OBJECTIVES OF RESEARCH PROGRAMMES: -**

### **2.1 OBJECTIVES OF RESEARCH IN ENGINEERING EDUCATION:**

Research projects in the area of Engineering Education (Inter- disciplinary) are to be undertaken to fulfill the following objectives:

- To apply the concepts, principles and procedures of Engineering / Technology in the field of education and vice-versa.
- To apply social science research methodology in providing solutions for educational problems observed in technical education.
- To promote research culture as a distinct characteristic of the professional educators in technical, technician and vocational education.
- To foster interaction between industries and educational institutions.
- To foster interdisciplinary approaches in educational process
- To make research as an essential procedure for educational innovations.

## **2.2 OBJECTIVES OF RESEARCH IN ENGINEERING:**

Research projects in the area of Engineering are to be undertaken to fulfill the following objectives:

- Lead the academic world and conduct internationally high-level researches in each engineering field
- Aim to discover new phenomena and create new technologies, based on principles and rules in natural phenomena and pursuit of truth in each engineering field
- Conduct cutting-edge researches to lead the academic and industrial worlds at home and abroad and create and develop new academic and technological fields
- Globalize research and education
- Provide suggestions for the future of humanity and the earth, based on high-level academic foundations and vision
- Conduct researches that contribute to the development of human resources who can play a leading and core role in society and researchers who can conduct cutting-edge researches

## **3.0 PRIORITY AREAS OF RESEARCH**

### **3.1 PRIORITY AREAS OF INTER-DISCIPLINARY RESEARCH IN ENGINEERING EDUCATION**

The researchers will be required to carry out research in the following thrust areas of priority to the institute:

- Human Resource Development (Training and development of staff of technical education institutions, industries and Government departments)
- Curriculum development and evaluation
- Outcome Based Education & Accreditation
- Strategic Planning and Institutional Development
- Instructional materials and media development, including e-learning
- Teaching learning process
- Testing and evaluation including student evaluation
- Human Resource Management /Professional Development
- Knowledge Management
- Governance and educational management including Management Information System
- Technology Enabled Teaching and Learning
- Student services including Guidance & Counselling
- Educational Psychology/HRD Psychology
- Sustainable development
- Technical education for the disadvantaged (persons belonging to Scheduled and Backward castes, minority communities, disabled persons, persons living in difficult circumstances and women)
- Any other area relevant to Technical Education

### **3.2 PRIORITY AREAS OF RESEARCH IN CIVIL & ENVIRONMENTAL ENGINEERING**

The researchers will be required to carry out research in the following thrust areas of priority to the institute:

- Coastal, Ocean and Environmental Engineering
- Remote Sensing and GIS Applications in Marine Studies
- Geographical Information Systems (GIS) Applications
- Urban Infrastructure Planning & Management, Vulnerability Assessment Modeling
- Geo-environmental Engineering
- Laboratory Testing of Materials
- Landfill Design
- Environmental Impact Assessment
- Geospatial Technologies
- Contaminated Site Assessment and Remediation
- Any other related areas of Civil & Environmental Engineering

### **4.0 Ph.D. PROGRAMME IN ENGINEERING EDUCATION:**

#### **4.1 ELIGIBILITY:**

The Candidates have to refer the regulations of University of Madras.

#### **4.2 MODE OF SELECTION:**

The admission to Ph.D. Programme will be made through a Departmental Selection Committee, constituted by the Director of NITTTR. The Departmental Selection Committee will process the application of each and every individual and examine the candidates about their suitability by conducting an Entrance test (Written and Oral). The Minutes of the Meeting of the Departmental Selection Committee with the signature of all the members will be forwarded along with the application of the candidate for approval of the University.

#### **4.3 DURATION OF THE RESEARCH:**

##### **(A) Full-time:**

A candidate registered as a full time candidate for the Ph.D. shall work continuously, in the institute under the supervisor concerned for a minimum period of THREE YEARS after provisional registration before submission of thesis.

##### **(B) Part-time:**

A candidate registered for Ph.D. Degree as a part-time candidate (Both internal and external) shall work for a minimum period of FOUR YEARS after provisional registration before submission of the thesis.

##### **Exemption:**

Exemption of one year from the minimum duration required is permissible in respect of candidates who possess a M.Phil. or M. Litt. or Master's Degree in the faculties of Law, Engineering, Technology and Architecture.

#### **4.4 FEES:**

Selected candidates for Ph.D. on Part-time / Full-time basis will be required to pay tuition and other fees to the institute and University of Madras as per rules in force. The current rates are given below:

##### **(A) Fees to the University:**

- |  |                        |
|--|------------------------|
| 1. Cultural and Youth Festival Fee<br>(Other than Sports and NSS etc.)         | Rs. 30/- at entry only |
| 2. Fees for the Development of Infrastructural<br>Facilities in the University | Rs. 30/- at entry only |
| 3. Library Fee   | Rs.120/- per annum     |
| 4. Continuation of PhD fees<br>(After registration)                            | Rs.1000/- per annum    |

##### **NOTE:**

**These fees are in addition to the fees to be paid for Admission/Application and Registration**

##### **(B) Fees to the Institute:**

###### **I. On Admission:**

Indian Nationals: Rs.2000/- (one-time payment only)

Foreign Nationals: Rs. 10,000/- (one-time payment only)

###### **II. After Registration:**

There will be two semesters in an academic year

First Semester: From April to September

Second Semester: From October to March

###### **(i) Full-Time students:**

Full time students sponsored by their employers or self-sponsored:

Indian Nationals: Rs. 10,000/- per semester

Foreign Nationals: Rs. 50,000/- per semester

###### **(ii) Part-time Students:**

Indian Nationals:

(a) Teacher candidates: Rs. 10,000/- per semester

(b) Non-Teacher candidates: Rs. 20,000/- per semester

Foreign Nationals:

Rs. 50,000/- per semester

- III.** Staff Members of N.I.T.T.T.R., Chennai selected for admission into Ph.D. Programme are exempted from payment of any fees to the institute.



## **5.0 Ph.D. PROGRAMME IN CIVIL ENGINEERING:**

### **5.1 ELIGIBILITY:**

The Candidates have to refer the regulations of Anna University.

### **5.2 MODE OF SELECTION:**

The candidate has to apply to Anna University and the selection of candidate is done by Anna University.

### **5.3 DURATION OF THERESEARCH:**

#### **(A) Full-time:**

A candidate registered as a full time candidate for the Ph.D. shall work continuously, in the institute under the supervisor concerned for a minimum period of THREE YEARS after provisional registration before submission of thesis.

#### **(B) Part-time:**

A candidate registered for Ph.D. Degree as a part-time candidate (Both internal and external) shall work for a minimum period of FOUR YEARS after provisional registration before submission of the thesis.

#### **Exemption:**

Exemption of one year from the minimum duration required is permissible in respect of candidates who possess a M.Phil. or M. Litt. or Master's Degree in the faculties of Law, Engineering, Technology and Architecture.

### **5.4 FEES:**

Selected candidates for Ph.D. on Part-time / Full-time basis will be required to pay tuition and other fees to the institute and Anna University as per rules in force. The current rates are given below:

#### **(A) Fees to Anna University:**

- |   |            |
|---|------------|
| a. Anna University Centre for Research – I Semester | Rs.30000/- |
| b. II Semester onwards                              | Rs.17000/- |
| c. Course work 4 papers Exam fees @ Rs.450/-        | Rs. 1800/- |

**NOTE: The above stated fees to be paid to Anna University**

#### **(B) Fees to the Institute:**

##### **On Registration:**

As the scholars pay Semester fees to Anna University, the difference in fees is to be paid to NITTTR as a one-time payment.

1. Differential fees: Rs. 2,050/- (one-time payment only)
2. Caution Deposit: Rs.5000/- (one-time payment only)

## 6.0 FULLTIME RESEARCH FELLOWSHIP (FTRF)

### 6.1 Number of fellowships

Five fellowships per year is considered both for University of Madras and Anna University for January and July Semesters. It is fixed at five as there are currently 5 supervisors in the Institute. In case of other faculty members getting guideship, it may be considered appropriately.

### 6.2 Duration

The fellowships will be for a period of 3 years only.

### 6.3 Selection procedure

#### 6.3.1 Eligibility

The scholar must have registered for Ph.D. under a faculty member at NITTTR, Chennai. The scholar must have obtained 60% or more or equivalent CGPA in Masters' Degree. Excellent academic record with good work ethics is preferred.

#### 6.3.2 Selection criteria

Criteria	Marks Assigned
PG marks	30
Work Experience	10
Written Test	20
Interview + presentation	40

#### PG marks

Percentage of Marks or equivalent in Post Graduate Degree scored by the scholar is apportioned to 30 Marks.

#### Rubrics for Work Experience:

Experience	Marks
> 6 months and ≤ 1 year	2.5
> 1 year and ≤ 2 years	5
> 2 years and ≤ 3 years	7.5
> 3 years	10

#### Interview + Presentation performance

The Selection Committee will be assessing the scholars from the presentation of their research proposal followed by an interview. The evaluation criteria are as follows:

S.No	Criteria	Marks
1	Research Experience including Publications	10
2	Communication skills	10
3	Knowledge and Aptitude in the area of Research	20
	<b>Total</b>	<b>40</b>

### 6.4 Terms and Conditions

Research scholar at NITTTR has to avail the fellowship as per the Terms and Conditions as in <https://shorturl.at/gqtxD>

## 7.0 LIST OF SUPERVISORS:

### 7.1 University of Madras

**1. Dr. E.S.M. SURESH**

Professor, Civil & Environmental Engineering  
Head, Department of Curriculum Development, Policy Planning and Coordination  
Areas of Interest: Curriculum Design, Technology Enabled Learning, Strategic Planning, Institutional Development, Outcome based Education and Accreditation  
Email ID: esmsuresh@gmail.com, esmsuresh@nitttrc.ac.in  
Telephone No: 044-2254 5423  
Date of Retirement: 31.05.2031

**2. Dr. S. RENUKADEVI**

Professor and Head, Department of Education  
Areas of Interest: Training Technology, Instructional Design and Delivery, Knowledge Management, Knowledge Based Computer Systems, Soft skills, Gender Studies and Guidance and Counselling  
Email ID: bmrenuka@nitttrc.edu.in  
Telephone No.: 2254 5464 / 461  
Date of Retirement: 31.01.2032

**3. Dr. G. JANARDHANAN**

Professor of Civil & Environmental Engineering  
Head, Centre for Academic Studies and Research  
Areas of Interest: Civil Engineering Education; Technology Enabled Learning; Online Education; Curriculum Design and Evaluation; Training Effectiveness; & other allied areas of Engineering Education  
Email ID: jana@nitttrc.edu.in  
Telephone No: 2254 5442 /94455 20968  
Date of Retirement: 31.08.2043

**4. Dr. V. SHANMUGANEETHI**

Professor & Head, Department of Computer Science and Engineering  
Areas of Interest: Learning Analytics, Machine Learning / Deep Learning / AI, Cyber Security, Data Mining and Algorithms, Educational Cloud Collaboration  
Email ID: shanneethi@nitttrc.edu.in / shanneethi@nitttrc.ac.in  
Telephone No: 2254 5442 /94455 20968  
Date of Retirement: 31.01.2040

### 7.2 Anna University

**1. Prof. USHA NATESAN Ph.D., D.Litt.,**

Director, NITTTR, Chennai  
Areas of interest: Coastal, Ocean and Environmental Engineering  
Remote Sensing and GIS Applications in Marine Studies  
Email ID : director@nitttrc.ac.in Telephone No.: 04422545405  
Date of Retirement: 08.07.2026

**2. Dr. E.S.M. SURESH**

Professor, Department of Civil & Environmental Engineering  
Head, Department of Curriculum Development, Policy Planning and Coordination  
Areas of Interest: Civil Engineering – Geographical Information Systems (GIS) Applications, Urban Infrastructure Planning & Management, Vulnerability Assessment Modeling  
Email ID: esmsuresh@gmail.com, esmsuresh@nitttrc.ac.in  
Telephone No: 044-2254 5423  
Date of Retirement: 31.05.2031

- 3. Dr. G. JANARDHANAN**  
Professor, Department of Civil & Environmental Engineering  
Head, Centre for Academic Studies and Research  
Areas of Interest: Geo Environmental Engineering, Laboratory Testing of Materials, Landfill Design, Environmental Impact Assessment, Geospatial Technologies, Contaminated Site Assessment and Remediation, Engineering Education, teaching with Technology, Accreditation, Blended & Flipped Classroom, Student Assessment, Strategic Planning and Institutional Development, MOOC development, QC/QA  
Email ID :gjanardhanan@gmail.com Telephone No.: 9445520968  
Date of Retirement: 31.08.2043
- 4. Dr. M. Senthil Kumar**  
Professor, Department of Mechanical Engineering  
Areas of Interest: Energy Engineering, Solar Energy, Mechanical Engineering, Automobile Technology, Thermal Engineering  
Email ID : senthilemerald@yahoo.com / senthilkumar@nitttrc.ac.in  
Telephone No.: 044-22545413  
Mobile No.: 9444169256  
Date of Retirement: 30.06.2038
- 5. Dr. M. Anil Kumar**  
Associate Professor, Centre for Rural and Entrepreneurship Development.  
Areas of Interest: Environmental Engineering, Biotechnology, Risk Assessment and Chemo-Metrics.  
Email ID : anilkumar@nitttrc.edu.in  
Mobile No.: 9979867474  
Date of Retirement: 31.07.2053
- 6. Dr. R. Suja Mani Malar**  
Associate Professor, Department of Electrical Electronics and Communication Engineering  
Areas of Interest: Control Systems, Sensors and Transducers, Instrumentation, Intelligent control, Artificial Intelligence, Renewable Energy Systems, Electric Drives Control, Robotics and Automation  
Email ID : rsmm@nitttrc.edu.in  
Telephone No.: 044-22545417  
Mobile No.: 9443177607  
Date of Retirement: 31.05.2042
- 7. Dr. K. N. Shoba**  
Associate Professor, Department of Education  
Areas of Interest: English Language Teaching, English Literature  
Email ID : shoba\_kn@nitttrc.edu.in  
Telephone No.: 044-22545465  
Mobile No.: 9884071114  
Date of Retirement: 30.11.2046
- 8. Dr. S. Saravana Perumaal**  
Associate Professor, Department of Mechanical Engineering.  
Areas of Interest: Industrial Robotics, Manufacturing and Automation.  
Email ID : saravanaperumaal@nitttrc.edu.in / sspmech@gmail.com  
Telephone No.: 044-22545400-Extn:502  
Mobile No.: 9944461010  
Date of Retirement: 31.05.2045

## **8.0 APPLICATION PROCEDURE:**

### **8.1 Ph.D. under University of Madras**

Candidates have to apply online at [Welcome to University of Madras \(unom.ac.in\)](http://unom.ac.in). The instructions are given clearly. Candidates are informed to submit the Hard copy of the on-line Application form to the respective University Department / Affiliated College / Research Institution where the candidate is proposed to do their research work.

### **8.2 Ph.D. under Anna University**

Admission process is carried out by Anna University. Recent Regulations can be referred from the Anna University website.

## **9.0 FOR FURTHER INFORMATION:**

If you need any clarification or further information, feel free to write or call:

**Prof. Dr. G. Janardhanan**

Professor of Civil & Environmental Engineering  
Head, Centre for Academic Studies and Research  
NITTTR, Taramani, Chennai – 600 113  
Telephone No. 2254 5442  
[Email:casr@nitttrc.edu.in](mailto:casr@nitttrc.edu.in)

**DIRECTOR**