



NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING AND RESEARCH, CHENNAI

(Ministry of Education, Government of India)



Advance your Career

with a Professional Degree from
the Country's Most Preferred National Institute

Prospectus



NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING AND RESEARCH

(Ministry of Education, Government of India),

National Institute of Technical Teachers Training and Research (NITTTR), Chennai was established in 1964 by the Government of India as a key catalyst Institution for ensuring quality in Technical Education in South India comprising the states of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana and Union territory of Pondicherry. This Institute being a Resource Institute offers Educational services in Curriculum / Material / Institutional Development, Instructional Methods, Media, Examination reforms, Continuing Education, Distance Learning, Training and Development, Educational Psychology, Educational Management and Research. The Institute strives continuously and vigorously to achieve greater heights of excellence by actively collaborating with National and International agencies on projects and programmes aimed at quality improvement of Technical Education Systems.



Our Vision

To serve as a “One-Stop Institute of Excellence” and create an indelible mark in the fields of Multidisciplinary Education, Training, Research and Innovation at the Global Level.



Our Mission

- ◆ To address the current challenges in the field of Technical Education and fulfill the evolving needs and expectations of the changing world by renewing the principles of the Teaching Learning process.
- ◆ To anchor teaching in the quality culture of the Technical Institutions and articulate pedagogical competence to satisfy the demand for “Lifelong Learning”.
- ◆ To transform the traditional “One Size Fits All” Model to “Skills over Degrees” Model.



Core Values

Quality, Innovation, Collaboration,
Ethics and Excellence

Departments

- Civil and Environmental Engineering
- Computer Science and Engineering
- Curriculum Development, Planning and Coordination
- Education
- Educational Media and Technology
- Electrical, Electronics and Communication Engineering
- Mechanical Engineering

Centres

- Academic Studies and Research
- Educational Management and Applied Science
- International Affairs
- Resource Centre
- Rural and Entrepreneurship Development



Let us strive together to escalate the quality of education, because education has the power to change the World!



Prof. Dr. Usha Natesan
Director



Ph.D. Programmes

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 faculty members of NITTTR 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. The Institute has been recognized by Anna University as a R&D Centre from December 2016. NITTTR, Chennai offers Doctoral research in the areas of Engineering Education and Civil & Environmental Engineering. The Institute offers research fellowships for fulltime Scholars upto 3 years.



Ph.D. in Engineering Education

The researchers will be required to carry out research in the following thrust areas of priority to the institute namely Teaching learning process, Human Resource Development, Curriculum development and evaluation, Outcome Based Education & Accreditation, Strategic Planning and Institutional Development, Instructional materials and media development, including e-learning, 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 and any other area relevant to Technical Education. Around 98 scholars have been awarded the Ph.D. in Engineering Education from the University of Madras. Currently 2 Fulltime and 6 Part-time scholars are pursuing Ph.D. in Engineering Education.

Ph.D. In Civil Engineering

The priority areas of research in Civil & Environmental Engineering are 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. Currently 8 Fulltime Scholars and 4 Part-time scholars are pursuing Ph.D. in Civil engineering affiliated to Anna University.

FULL-TIME POST GRADUATE PROGRAMMES IN ENGINEERING

(2022 - 2023)

(Affiliated to Anna University)

M.E. (Infrastructure Engineering and Management)

M.E. (Electronics and Communication Engineering - Industry Integrated)

M.E. (Multimedia Technology)

M.E. (Energy Engineering)



M.E. (Infrastructure Engineering and Management)

Infrastructure is a basic system that a country or an organization uses in order to work efficiently. The Program lays an emphasis on Construction/Infrastructure engineering in terms of designing, planning and environmental management of large buildings, townships, roads and bridges, transportation engineering and Infrastructure Projects. The Employment opportunities include Real Estate, Private and Public Sector Undertaking, Transportation Centres, Consultancy Firms, Industrial Plants and Housing & Urban Development Authorities. More than all the above opportunities NITTTR will provide an excellent Job opportunity to serve as a great teacher in Engineering and Polytechnic Colleges to the successful students.

Core Courses

- Statistical Methods for Engineers
- Project Management for Infrastructure
- Traffic Engineering and Management
- Advanced Structural Design
- Infrastructure Planning and Management
- Management of Human Resource and Quality
- Geographical Information systems for Infrastructure Planning.
- Urban Environmental Management
- Geo Technical Engineering for Infrastructures
- Industrial Training Phase I (2 Weeks)
- Contract Laws and Regulations
- Infrastructure for SMART City Planning
- Industrial Training (4 weeks)
- Seminar
- Project Work (Phase I)
- Project Work (Phase II)

Elective Courses

- Environmental Impact Assessment for Infrastructure Projects
- Economics and Financial Management
- Pre-stressed Concrete Structures
- Material Procurement and Management
- Earthquake Resistance Design of Structures
- Sustainable Development and Urban Planning
- Modern Construction Material and Technology
- Maintenance and Rehabilitation of Structures
- Pavement Analysis Design and Evaluation
- Disaster Mitigation and Management
- Value Engineering
- Bridge Engineering and Maintenance
- Safety in Construction Engineering Organizational Development.



M.E. (Electronics and Communication Engineering - Industry Integrated)

M.E. in Electronics and Communication Engineering (Industry Integrated) is a unique course and inclined towards Industrial needs. In this programme, the latest technology such as Internet of Things, Industry 4.0, Cyber Physical System, Industrial Automation, Embedded System on Chip design, Machine learning, Deep Learning, Advanced Communication Systems, E-vehicle Technologies and Telemedicine have been focused. Also majority of the courses offered under these programmes will be focusing more on practical applications with Industry relevant case studies.

Core Courses

- Applied Mathematics for Electronics Engineers
- Advanced Digital Signal Processing
- Embedded Controllers
- Industrial Automation and Control
- Network Security Technologies
- Virtual Instrumentation
- ASIC and FPGA
- Wireless Communication and Networking
- Cyber Physical Systems
- Wireless Adhoc and Sensor Networks
- Embedded Systems Programming Laboratory
- IoT and Cyber Physical Systems Laboratory
- Research Methodology and Seminar
- Project Work Phase I & II (Industry supported)

Elective Courses

- Internet of Things
- Soft Computing Techniques
- Optical Networks
- Computer Vision
- Industry 4.0
- Broadband Access Technologies
- Automotive Electronics
- Smart Antennas
- Electromagnetic Interference and Compatibility
- System on Chip
- Software Defined Networks
- Machine Learning
- Real Time Systems
- Electronics for Solar Power
- Healthcare Technologies and IoMT
- Robotics and Automation
- Cognitive radio communications
- Micro and Nano Electro mechanical Systems
- Quantum computing
- Deep Learning Techniques
- Cloud computing Technologies
- Renewable Energy Resources
- E -Vehicle Technologies
- Intelligent Transportation Systems
- Intellectual property and rights



M.E. (Multimedia Technology)

The Masters in Multimedia Technology prepares postgraduates to excel in the diverse and pervasive field of Multimedia Information Technology to emerge as a skilled exponent of their field. Recent advances in computer graphics, sensors and screen technology give us unprecedented possibilities to completely immerse humans in virtual environment or augment real environments. Virtual Reality (VR) and Augmented Reality (AR) constitute a completely new computing paradigm finding its way into applications for industry, health care, education, entertainment, content development, advertising, marketing, etc. This program approaches technology with a critical eye, understanding the ever-present impact that computational technologies have on our lives.

This program is designed for students to become professionals who can design, develop and evaluate animation movies, new media, apply media security for multimedia applications, innovate ideas and smart solutions for game development, AR and VR applications and video production. This degree is versatile and opens up a plethora of professional opportunities in the media rich-digital world.

Core Courses

- Applied Probability and Statistics for Computer Science Engineers
- Research Methodology and IPR
- Advanced Data Structures and Algorithms
- Advanced Graphics and Animation
- Multimedia Communication
- Advanced Data Structures and Algorithms Laboratory
- Multimedia Authoring Tools Laboratory
- Digital Image Processing
- Media Security
- Mixed Reality
- Multimedia Databases
- Digital Image Processing Laboratory
- Video and Audio Processing

Elective Courses

- Sound Engineering
- Multimedia Compression Techniques
- 3D Game Modeling and Rendering
- Artificial Intelligence
- Big Data Mining and Analytics
- Multimedia Information Storage and Retrieval
- Computer Vision
- GPU computing
- Social Network Analysis
- Cloud Computing Technologies
- Non Linear Editing
- User Interface Design
- Voice Technologies
- Human Computer Interaction
- Web design and Management
- Video Processing and Analytics
- Short film Development
- Medical Image Processing
- Machine Learning
- Internet of Things
- Biometric Systems
- Full Stack Web Application Development
- Deep Learning



M.E. Energy Engineering

M.E.in Energy Engineering is a multidisciplinary program that aims to meet the current and growing challenge of dwindling fossil fuel resources and the critical demand for alternative, renewable energy sources as global priorities. The program covers fundamental engineering knowledge and skills in such areas as energy generation, conversion, electrical power systems and energy management along with modules on energy sources, energy policy, energy economics and associated environmental issues. The program will provide the student with necessary skills to develop as a professional engineer who specializes in dealing with the breadth of energy systems used to generate, convert, transmit and manage energy.

Core Courses

- ❖ Energy Management and Environmental Benefits
- ❖ Fluid Mechanics and Heat transfer
- ❖ Instrumentation for Energy Systems
- ❖ Renewable Energy Systems
- ❖ Thermodynamic Analysis of Energy Systems
- ❖ Research Methodology and IPR
- ❖ Energy Conservation in Industrial Utilities
- ❖ Computational Fluid Dynamics for Energy Systems
- ❖ Energy Efficient Buildings Design

Elective Courses

- ❖ Design and Analysis of Turbo Machines
- ❖ Fluidized Bed Systems
- ❖ Bio Energy Technologies
- ❖ Energy Forecasting, Modeling and Project Management
- ❖ Modeling and Analysis of Energy Systems
- ❖ Power Generation, Transmission and Distribution
- ❖ Nuclear Engineering
- ❖ Solar Energy Technologies
- ❖ Advanced Energy Storage Technologies
- ❖ Design of Heat Exchangers
- ❖ Hybrid and Electric Vehicles
- ❖ Power Electronics for Renewable Energy Systems
- ❖ Wind Energy Systems
- ❖ Advanced Power Plant Engineering
- ❖ Hydrogen and Fuel Cell Technologies
- ❖ Smart Grid
- ❖ Environmental Engineering and Pollution Control
- ❖ Industrial Safety



PG Certificate Programmes (1 Year) in Collaboration with Industries

Artificial Intelligence
and Machine Learning

Entrepreneurship
Development

Guidance and Counselling

Immersive Media Technology
for Extended Reality



PG Certificate Programmes (1 Year) in Collaboration with Industries

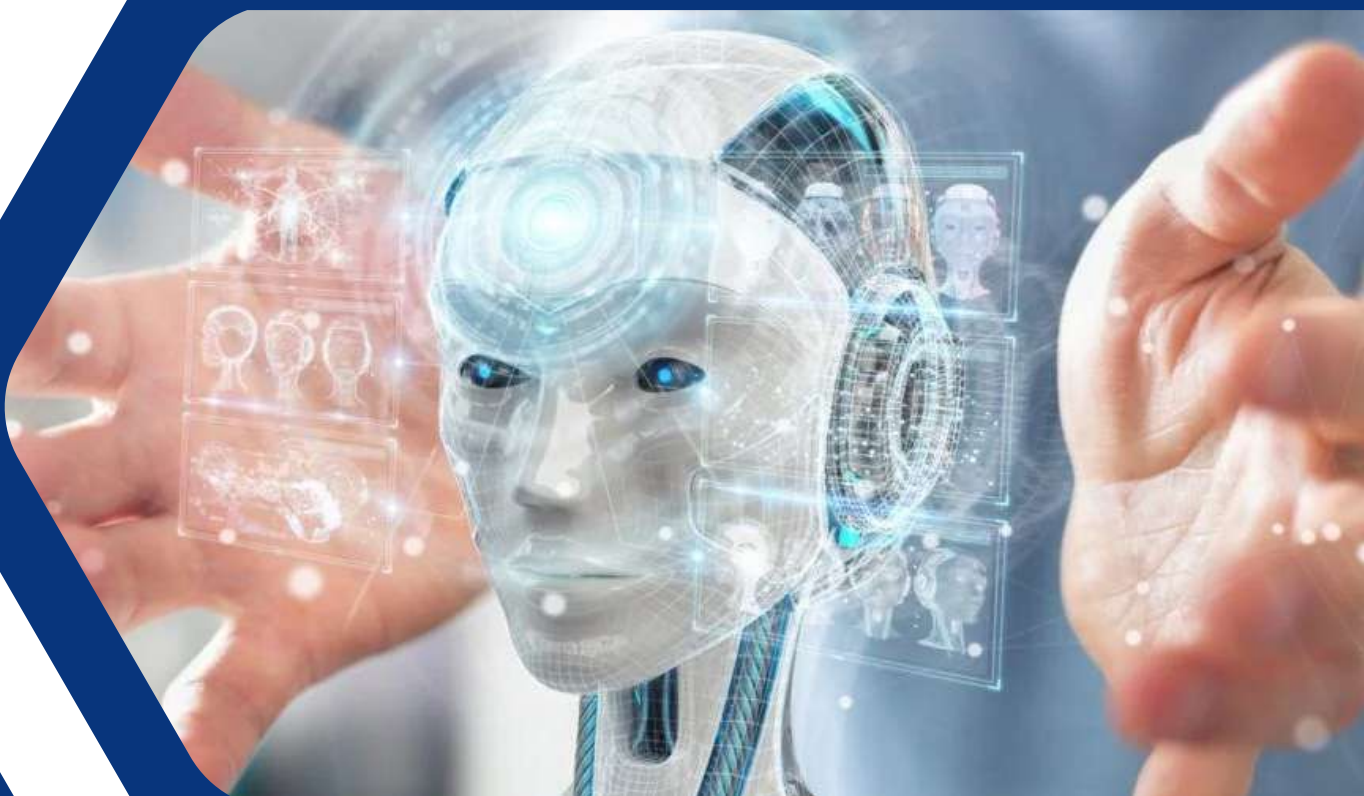
Certificate Programme on **Artificial Intelligence and Machine Learning**



Mode: Online

Courses

- Descriptive Analytics with Python Programming
- Data Mining and Predictive modelling
- Algorithm Intelligence System and Robotics
- Applications of Machine Learning in Industries
- Mini Project & Project



PG Certificate Programmes (1 Year) in Collaboration with Industries

Certificate Programme on **Entrepreneurship Development**

Mode: Online

Courses

- Problem Solving & Creativity
- Business Opportunities
- Marketing
- Financial aspects
- Project Work

Digital Skills like web analytics, business intelligence, digital marketing, social media and other relevant financial tools shall be incorporated in the above modules after introducing basic theoretical knowledge related to entrepreneurship development



PG Certificate Programmes (1 Year) in Collaboration with Industries

Certificate Programme on **Guidance and Counselling**

Mode: Online

Courses

- Introduction to Psychology
- Life Span Development
- Principles of Guidance & Counselling
- Mental Health & Well-being
- Effective Counselling Skills
- Psychological Assessment in Guidance & Counselling
- Practicum & Case Studies
- Project Work



PG Certificate Programmes (1 Year) in Collaboration with Industries

Certificate Programme on

Immersive Media Technology for Extended Reality - AR, VR and MR



Mode: Hybrid

Courses

- Refreshing Basics: An Introduction to Digital Content Creation
- Introduction to Game Engine
- Immersive Experience / User Experience Design
- Unreal Engine Curriculum for Extended Reality (Content Creation / Development using Unreal Engine)
- Specialization Project VR
- Specialization Project AR
- Specialization Project MR



World Class Facilities

We are committed to helping students, staff, and faculty experience Institutional life to the fullest. We have a profound commitment to the diversity of our community and are focused on creating an environment where students can thrive. Through our wide array of programs and services, we provide opportunities and experiences that build a community, help you grow personally and professionally, and create a place that you can call home now and throughout your life. NITTR, Chennai has excellent infrastructure, equipped with all modern facilities.



A WIN-WIN Combination of NITTR

World Class
Technical Teachers!



Enthusiastic Students!



Towards Achieving
Top Positions!



THE DIRECTOR

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