सत्यमेव जयते
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES
GOVERNMENT OF INDIA

PROSPECTUS
FOR
POST GRADUATE DIPLOMA IN TOOL DESIGN & CAD/CAM
(SENIOR TOOL DESIGNER - CAD/CAM)
JANUARY - 2026

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Central Institute of Tool Design

Balanagar, Hyderabad, PIN-500037

ABOUT

Central Institute of Tool Design (CITD) an ISO 9001:2015, 14001:2015 & 50001:2018 certified premier technical training institution of India, established in 1968; provides specialised training courses in Tool Design & Manufacturing, CAD, CAM, CAE, VLSI, Embedded Systems, Electronics, Mechatronics and Robotics at various levels such as Certificate, Diploma, Post Diploma, Post Graduate, M.E.

The Institute was established in the year 1968 by Government of India with the assistance of UNDP and ILO as an executing agency. It was converted into a Government of India Society in 1970 under the administrative control of the Ministry of MSME. The Development Commissioner; Ministry of MSME is the ex-officio Chairman of the Governing Council. The Principal Director is the Chief Executive Officer of the Institute.

ABOUT NSQF

The **National Skills Qualification Framework (NSQF)** is a competence-based framework that organizes all qualifications according to a series of knowledge, skills and aptitude. These levels, graded from 1 to 10, are defined in terms of learning outcomes which the learner must possess regardless of whether they are obtained through formal, non-formal or informal learning. NSQF in India was notified on 27th December 2003. All other framework, including the NVEQF (National Vocational Educational Qualification Framework) released by the Ministry of HRD, stand superseded by the NSQF.

The curriculum of the NSQF courses is based on the outcomes acquired by the learners after completion of the course. All the NSQF compliance courses have been vetted by several related Industries.

Under NSQF, the learner can acquire the certification for competency needed at any level through formal, no-formal or informal learning. In that sense, the NSQF is a quality assurance frame work.

Currently more than 100 countries have or are in the process of developing national qualification frameworks.

AIMS & OBJECTIVES

a) Training of the technical personnel in design and manufacture of Jigs & Fixture, Dies & Moulds, Press Tools, CAD/CAM, CAE, VLSI & Embedded Systems, Mechatronics & Robotics.

b) Provision of advisory, consultancy and common service facility & service to small scale units including assistance in the design and development of tools for various processes, Calibration of Mechanical Measuring Instruments.

c) Recommending measures to standardize tools and tooling elements, components of Jigs & Fixtures, Dies & Moulds, Press Tools and other tools.

d) Production of Jigs & Fixtures, Press Tools, Dies & Moulds, Gauges and Special Cutting Tools subject to the condition that job works undertaken by the Institute should suit to the needs of the training.

The Institute has a well-equipped Tool Room with sophisticated CNC machines like CNC EDM, CNC Wire Cut EDM 4-Axis & 5-Axis High Speed Machining Centres, and 3D Coordinate Measuring Machine with Scanning & Digitization facilities. The Institute is equipped with latest version of EMCO Table Top CNC Turning and Milling machines with closed loop system to impart training in CNC Programming.

The Calibration laboratory is set up in CITD with Universal Horizontal Microscope ULM OPAL600 Carl Zeiss Technology, Germany and Slip Gauge Measuring Unit 826 with Millitron 1240, Mahr, Germany to Calibrate Limit Gauges, Micrometers, Dial Indicators, etc.

The CAD/CAM Centre is equipped with latest configuration workstations and softwares like AutoCAD, Pro-E , CATIA, ANSYS, Hypermesh, Unigraphics, Master CAM , Del CAM, Nastran & Patron, ABACUS.

The Institute is also equipped with an Automation Centre with Programmable Logic Control Systems, Hydraulic, Pneumatic and Electronic Controls with Simulators.

CITD has a Library with a collection of technical books in Tool & other Engineering fields and subscribes to various international journals like CIRP Annals, American Machinist, Journal of Engineering Materials & Technology (ASME), Precision Engineering (JAPAN) and Precision Tool Maker, etc. The documentation centre collects and organizes information and data useful for the technological advancement in Tool Engineering. For the dissemination of information, the centre also provides technical enquiry service.

POST GRADUATE DIPLOMA COURSES

Post Graduate Diploma in Tool Design & CAD/CAM (PGDTD & CC) (Senior Tool Designer CAD/CAM)

Duration	1800 Hrs/12 Months (2 Semesters)
Age	Up to 45 Years.
No. of Seats	60
Eligibility for Admission	B.E/B.Tech (Mechanical Engineering and equivalent thereof
Course Fee	₹ 30,400 /- per Semester

MODE OF ADMISSION

First cum first serve basis

DETAILS OF FEES & PAYMENT

S. No.	Item/Fees	Amount
1	Registration Fee	₹1, 800/-
2	Course Fee Per Semester	₹ 30,400/-
3	Caution Deposit	₹1,000/-

Course fee for 2nd semester should be paid within 30 working days from the date of commencement of semester.

Candidates belonging to SC & ST category are exempted from paying course fee, however Registration fee and caution deposit has to be paid by the candidate.

SYLLABUS

Semester - I:

Unit I

Introduction to CNC technology and CNC programing

Introduction to CNC technology – CNC machines & controls. History & development of CNC technology History & development of CNC technology. Conventional Vs. nonconventional machine tool Numerical control on CNC machine tools. CNC control and CNC Control and types of CNC control. Calculation of technological data for CNC machining. CNC clamping system. Implementation of JH for CNC Basic health and safety. CNC programming basics. Introduction to manual NC programming. Manual NC programming for lathe & milling machines. Application Numerical Control, Advantages, & Disadvantages, Adoptive Control System. Practical training & workshop for above sub topics on CNC Machine.

Unit II

CNC Programming

Introduction to CNC programming. Introduction and demonstration of line programs CNC programming for lathe & milling machine using iso codes into the CNC simulator. CNC programming for lathe and milling machines using different machining cycles into the CNC simulator. Procedures associated with part programming, Cutting process parameter selection, Process planning issues and path planning, G & M Codes, Interpolations, Canned Cycles and Subprograms, Tool compensations Exposure for programming and simulator of FANUC, SINUMERIC, DMG TURNPLUS & Controls through post processors. Programming exercise. Machining of programmed exercise on CNC lathe & milling machines.

Unit III

CNC Machining – Lathe

Plan and optimize programs for CNC turning operations. Calculate parameters like speed feed etc. and set a references for the various operations. Prepare operation and operation sequence for the lathe operations like turning, grooving etc. Prepare & set CNC lathe operations and test run Programmed. Execute program and inspect simple geometrical forms / standard parts. Use of various PPE's on CNC lathe machine. Manufacturing a product by CNC Machining

UNIT-IV

CNC Machining –Milling

Plan and optimize programs for CNC Milling operations. Calculate parameters like speed feed, depth of cut etc. and set a references for the various operations. Various methods of work process like edge finding block center etc. Prepare & set CNC Milling operations and test run programme. Execute program and inspect simple geometrical forms / standard parts Use of various PPE's on CNC milling machine.

UNIT-V

CNC Machining –EDM & WEDM

Plan and optimize programs for CNC Wire EDM operations. Calculate parameters affecting surface finish Calculate various machining parameters like IP, voltage tc Prepare & set CNC Wire EDM operations and test. Execute program and inspect simple geometrical forms / standard parts.
Plan and optimize programs for CNC EDM operations. Prepare & set CNC EDM operations and test run programmed Execute program and inspect simple geometrical Forms / standard parts. Use of various PPE's on CNC milling machines.

UNI T-VI

Modern CNC Systems

Indexable carbide tools, Modular Tooling & Tool Presetting, Machining Centers, Automatic tool changers Introduction to advanced CNC systems like HSM, RP, CIM. Importance and application of advanced CNC systems. Computer Aided Part Programming Part Program Generation through Creoparametric / DelCAM Post Processors Computations for part programming.

Semester -II:

UNIT-I

Introduction to Plastic and Concept of Injection Moulds Assembly to produce Plastics

Introduction to Plastic and Plastic Parts –Classification, Use and Application. Plastic Parts Manufacturing Process – Moulding Operations, Moulding Machines for Plastic Parts Manufacturing, Injection Moulding Process, Injection moulding Machine Basic terminology in moulds, General Mould Construction Mould cavities and Cores – Size Calculations, Bolsters, Ancillary items, Attachment of mould to platen, – Discussion of Various computer software for

Stamping Die Design for sheet metal Parts Manufacturing.

UNIT II

Element of Injection Moulds and Design

Basic Terminology injection, ejector grid, ejector plate assembly, ejection techniques, ejection from fixed half, sprue pullers, feed system – runner, gates Parting surface –general, flat parting surface, non-flat parting surface, relief of parting surface, venting. Mould cooling – general, cooling insert-type mould plates, cooling insert-type mould plates, cooling other mould parts, water connections and seals Standard mold system – general considerations, standard two-parts mould systems, deviations from the standard mould, comparative terminology -Designing of Injection Moulds for Given Component

UNIT III

Injection Moulds for Undercut Parts

Splits – general, sliding splits, angled-lift splits, standard parts for the splits type mould. Side cores and cavities – general, design features, types of side core and side cavity, standard mould parts. Moulding internal undercuts – general, from pin, split cores, side cores, stripping internal undercuts, standard mould parts -Designing of Injection Moulds for Given Component.

UNIT IV

Injection Moulds for Threaded Parts and three Plate Mould concept

Mould for thread components – general, moulds for internally threaded components, moulds for externally threaded components, Mould construction, standard unscrewing type mould systems. Multi-day light molds – general, underfeed molds, triple-daylight mould, standard parts for underfeed moulds. Runner less moulds – general, nozzle, hot runner unit mould, Insulated runner mould, Hot runner plate moulds, standard parts for the hot runner type mould.

UNIT-V

Injection Mould Design

Procedure for designing an injection mould – general, primary positioning of inserts, ejector system, ejector grid, complete the top half the drawing, complete the plan view, complete the crosssection, complete drawing and checking mould drawings.

Documents to Be Handed Over at the Time of Admission

a) Original certificates of qualifying examination, i.e., SSC/Matric/ B.E. The original certificates will not be given back to the trainees under any circumstance till they complete the scheduled training period at this Institute. Therefore candidates are advised to take sufficient number of photo copies to keep with them before submitting the originals to CITD at the time of counselling.

b) Certificate of Physical fitness from any Assistant Civil Surgeon. The Institute reserves the right to send the candidate for further Medical examination, if necessary.

c) The trainee should give an undertaking for good conduct and behaviour and to abide the rules & regulations as prescribed by the Institute.

POST ADMISSION INFORMATION & GUIDELINES

1. Medium of instruction – English
2. Working hours 09:00 a.m. to 01:00 p.m. with Sunday as weekly holiday. (Weekly holidays & working hours are liable to change.)
3. Student shall be allowed to appear for the end examinations, if he/she possesses **minimum 85%** attendance only.

GENERAL TERMS AND CONDITIONS TO BE FOLLOWED DURING TRAINING:

a. Hostel: Limited hostel facility is available. The students will have to pay hostel rent in advance as per rules and regulations of the hostel.
b. No traveling allowance or any other allowance will be paid.
c. Final year trainees are exposed to campus interviews, by intending industries. They can appear for interviews and get absorbed. However, the Institute does not guarantee any employment or absorption.
d. The trainees shall not cause any damage or loss to the property of the Institute, failing which they are liable to bear the loss.
e. Any information given in the application by the candidate, if, found incorrect after selection, the trainee is liable for such punishment as may be deemed fit including his/her disqualification and / or dismissed from training course.
f. The trainees are expected to complete the assignments as per schedule of training programs.
g. The trainees will have to strictly undergo the training as per the schedule and instructions and comply with all the rules of discipline as may be in force from time to time. Copying in examination and malpractice during the exams will be viewed seriously.
h. The trainees are not permitted to join part-time / evening courses of study conducted by any other University / Institute.
i. The trainees are expected to maintain utmost discipline and good manners inside and outside the campus and not get involved in activities which cause blemish to the good image of the institute.
j. The trainees have to follow the rules and regulations pertaining to any department of the Institute.
k. No request for extension of time for submission of proof of pass or submission of originals and the trainees have to abide by these rules.
l. The Institute reserves the right to alter, vary change and / or modify the rules governing the admissions, or any other procedure from time to
m. time depending upon exigencies of training and the trainees have to abide by these rules.
n. The trainees have to follow the rules and regulations made by the institute pertaining to any department, examination, hostel, discipline etc.
o. The Institute reserves the right to terminate the trainee at any time at its discretion for misconduct/ indiscipline/irregular attendance, breach of rules etc. In such an event, the course fee paid by the candidates shall not be refunded.
p. The Institute shall take all precautionary measures with regard to safety. However, the trainees should decide to join the course at their own free will and at their own risk. In case of any injury or any disablement (temporary/permanent) suffered by the trainees during the course due to any accident or otherwise, the Institute shall not be liable to pay any compensation whatsoever. The trainees shall indemnify the Institute in this account.
q. Trainees shall arrange at their cost, all stationary, drawing and other instruments and books prescribed for the course.
r. Ragging of any kind will be viewed seriously and offenders shall be liable to be prosecuted under the law. Their training will be terminated and the fee paid by them shall be forfeited.

   They will not be allowed to rejoin the semesters/course afresh.
s. The trainees should give an undertaking to abide by the rules & regulations of the training.
t. All matters concerning the admissions and conducting the course shall be subject to Hyderabad jurisdiction only.

IMPORTANT DATES

- **Start date of on-line application: 17-11-2025 (Monday)**
- **End date of on-line application: 20-12-2025 (Saturday)**
- **Admission Counselling: 22-12-2025 (Monday)**

PLACEMENT

All the previous batches have a record of 100% placements.

Link for online application:

https://tinyurl.com/pgtd2025

or Scan the QR Code:

Our Major Recruiters

CATERPILLAR
TATA GROUP
PHILIPS
Godrej
LARSEN & TOUBRO
ASHOK LEYLAND
Mahindra
General Electric
VOLVO
TVS
BAJAJ
EICHER
VEM ignited minds... for you
CYIENT
Ford
LARSEN & TOUBRO
MARUTI SUZUKI Way of Life!
JOHN DEERE
JEH AEROSPACE

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