

**CENTRAL INSTITUTE OF PLASTICS ENGINEERING AND TECHNOLOGY (CIPET)**  
(Ministry of Chemicals and Fertilizers, Govt. of India)  
**Guindy, Chennai - 600 032**

**CAD/CAM/CAE SOFTWARE TRAINING PROGRAMMES IN**  
**CIPET, CHENNAI**

**1. CAD PROGRAMMES**

**1.1 CAD USING UNIGRAPHICS**

**Fee: Rs 10,000/-**

**Duration: 100 hrs**

**Modeling:** Introduction, Sketch, Curve, Curve Operations, Form Feature, Feature Operation, Transform.

**Assembly:** Assembly of Components, Exploded Views, Sequencing, Context Control, Cloning and Component arrays editing, Top Down Assembly.

**Drafting:** Drawing sheets, Views, Dimensioning, Annotations, Symbols, Tabular note and Part list.

**1.2 CAD USING PRO/E**

**Fee: Rs 10,000/-**

**Duration: 100 hrs**

**Part Modeling:** Introduction, Sketch, Base features, datum features, sections in sketch based features, Edit feature, engineering features, construction features, advanced features, tweak feature, UDFs & Group, Relation & family Table, Resolving feature failures

**Pro/Assembly:** Creating Assemblies, placing, patterning, packaging, freeform Manipulation of components, Top Down Assemblies, Exploded view.

**Pro/Detail:** Drafting basics, creating a Drawing with Model views, Dimensioning & Detailing, Tables & BOM Balloons

**1.3 CAD USING CATIA**

**Fee: Rs 10,000/-**

**Duration: 100 hrs**

**3 D Part Modeling:** Introduction to GUI, Sketcher, Constraints, sketch-based features, Dress up features, Transformation features, Associating bodies with Boolean Operations, Reference Elements, Modifying Features.

**Assembly Design:** Creating assembly, Manipulating components in assembly, Assembly constraints, Exploded view, Clash checking, Assembly features, Scene creation, Using Mechanical Standard parts, Top Down Assembly.

**Drafting:** Generative Drafting, Interactive Drafting, Creating Views, Sections, BOM Generation.

## 1.4 CAD USING I-DEAS

**Fee: Rs 10,000/-**

**Duration: 100 hrs**

**3D Modeling:** Sketching, Constraining, Catalogs and Parameterized parts, Creating features, Advance features, Feature operations, Construction operations, Surface techniques, Bin and Library Management  
**Assembly:** Top Down and Bottom Up, Sequencing & animation, Patterning, Exploded Views, Introduction to Mechanism design.

**Drafting:** Associative and Non-associative Dimensioning, Views and Dimensions, Utility Symbols, Bill of Material

## 2. CAD/CAM PROGRAMMES

### 2.1 CAD/CAM USING UNIGRAPHICS

**Fee: Rs 18,000/-**

**Duration: 200 hrs**

**Modeling:** Introduction, Sketch, Curve, Curve Operations, Form Feature, Feature Operation, Transform.  
**Assembly:** Assembly of Components, Exploded Views, Sequencing, Context Control and Cloning and Component arrays editing, Top Down Assembly.

**Drafting:** Drawing sheets, Views, Dimensioning, Annotations, Symbols, Tabular note and Part list.

#### **Direct Modeling**

**Free form feature:** Sheets from points, Making sheets from variable cross sections, Bridging, Offsetting, Filletting & Trimming sheets

**Sheet Metal feature:** Tab, Flange, Break corner, closed corner, Normal cutout, Jog, Bend, Dimple, Bead, Unbend, Rebend, Edge rib, flat solid.

**Manufacturing:** Model Creation, Tool Selection, Geometry Definition, Machining Methods, Planer Milling and Contour milling Operations and Post Processing.

### 2.2 CAD/CAM USING PRO/E

**Fee: Rs 18,000/-**

**Duration: 200 hrs**

**Part Modeling:** Introduction, Sketch, Base features, datum features, sections in sketch based features, Edit feature, Engineering features, Construction features, Advanced features, Tweak feature, UDFs & Group, Relation & family Table, Resolving feature failures

**Pro/Assembly:** Creating Assemblies, placing, patterning, packaging, freeform Manipulation of components, Top Down Assemblies, Exploded view.

**Pro/Detail:** Drafting basics, creating a Drawing with Model views, Dimensioning & Detailing, Tables & BOM Balloons

**Pro/Surface:** Creating a Surface Feature, Trimming Quilts, Flattening & Bending, Creating Solid Geometry Using Quilt, Freeform Surfaces, Boundary, Conic surface and N-sided patch, style tools

**Pro/ Sheetmetal:** Introduction creates conversion, wall, rip, cut, form, flatten form, notch punch, and bend, unbend, bend back, corner relief, deform, edge bend.

**Pro/Mold design:** Introduction, Reference & work pieces, Mold Parting surfaces, Mold volumes, Extracting Mold components, split components.

**Pro/NC:** Manufacturing Process & Parameters, Tooling, NC sequence-Milling & Lathe-turning, CL Data, NC sequence Definition, Creation of CL Data File, NC Post Processing.

## **2.3 CAD/CAM USING CATIA**

**Fee: Rs 18,000/-**

**Duration: 200 hrs**

**Part Modeling:** Introduction to GUI, Sketcher, Constraints, sketch-based features, Dress up features, Transformation features, Associating bodies with Boolean Operations, Reference Elements, Modifying Features.

**Assembly Design:** Creating assembly, Manipulating components in assembly, Assembly constraints, Exploded view, Clash checking, Assembly features, Scene creation, Using Mechanical Standard parts, Top Down Assembly.

**Drafting:** Generative Drafting, Interactive Drafting, Creating Views, Sections, BOM Generation.

**Surface Design:** Wire frame geometry creation, Basic surface, Operations on surface, advanced surface, Surface based features in Part design.

**Sheet metal:** Introduction, Sheet Metal Parameters, Creating the Side Walls, Cutout, Automatic Bends.

**Mold Design:** Core cavity separation, Basic mold design.

**Manufacturing:** Basic Tasks, Part operations, Programs & Processes, Managing Manufacturing Entities, Verification, Simulation and NC Code generation.

## **2.4 CAD/CAM USING I-DEAS**

**Fee: Rs 18,000/-**

**Duration: 200 hrs**

**3D Modeling:** Sketching, Constraining, Catalogs and Parameterized parts, Creating features, Advance features, Feature operations, Construction operations, Surface techniques, Bin and Library Management

**Assembly:** Top Down and Bottom Up, Sequencing & animation, Patterning, Exploded Views, Introduction to Mechanism designs.

**Drafting:** Associative and Non-associative Dimensioning, Views and Dimensions, Utility Symbols, Bill of Material

**Simulation:** Basics & General Analysis procedure, Free and mapped meshing, Quality check, linear, non-linear and variational analysis

**Manufacturing:** Model Creation, Operation and Tool Selection, Generation CL File, Post Processing.

## **3.CAE PROGRAMMES**

### 3.1 CAE USING HYPERWORKS

**Fee: Rs 15,000/-**

**Duration: 160 hrs**

**Hypermesh:** Basic modeling, Geometry cleanup, Organizing the model with collectors, Extracting mid surfaces & simplifying, Selecting the user Profiles, Project, Numbering, Mask, Normals, Interactive surface meshing, Element density, Algorithms, Checking element quality. **Introduction to solid meshing:** Solid panels, Drag, spin, Line drag, element offset, linear solid.

**Optistruct-** Linear Static Analysis, Thermal Analysis, Modal Analysis, Harmonic Analysis, Inertia Relief Analysis.

**Optimization-** Topology, optimization for solid problems, Optimization for stress problems.

**Hypermorph-** morph volumes, Morph to geometry, freehand morph, morph options

**Hypergraph, hyperview, Batch mesher.**

### 3.2 CAE USING ANSYS

**Fee: Rs 15,000/-**

**Duration: 160 hrs**

**Introduction to FEA & ANSYS:** GUI, Basics & general analysis procedure.

**Modeling:** Creating Solid model, Finite element modeling and importing models, Select Entities and Component manager.

**Meshing:** Quad and Tetrahedron mesh, Volumes, Areas, Line meshing. Free and mapped meshing, check mesh.

**Structural Analysis:** Static, Modal, Harmonic, Spectrum, p-method, Nonlinear & Transient analysis.

**Thermal Analysis:** Steady state thermal analysis.

**ANSYS Workbench:** Simulation, CFX Mesh, Engineering Data sheet and FE modeler.

**Report generation.**

### 3.3 CAE USING LS-DYNA

**Fees: Rs. 15,000/-**

**Duration: 100 hrs**

**Theory:** Introduction to basic concepts of FEA, Contact Analysis, Linear and Non-Linear analysis.

**FEA Terminologies** used in LS-Dyna: ALE, SPH.

**Analysis:** Larger Deflection Dynamics, Crash Analysis, Occupant Safety, Impact Analysis and Failure Analysis.

Post Processing-using Hyperview.

**Prerequisite:** knowledge of FEA and Hypermesh 8.0.

### 3.4 CAE USING MOLDFLOW

**Fees: Rs 15,000/-**

**Duration: 120 hrs**

**Introduction to CAE:** Basics of Plastics Product Design, Moldflow Modeling, Mesh Creation, Mesh Checking, Surface repair tools, Creating Feed system and cooling system.

**Meshing Tools:** create Node, curves, regions, move/copy, nodal mesh tools, edge mesh tools & check mesh diagnostics

**Modules:** Mid plane, Fusion and 3D Solid.

**Analysis:** Gate location, Fill, Flow, Cool, Pack, Warp, Shrinkage, molding window, Case Study.

**Pre-requisite:** Plastics & Mold knowledge.

### **3.5 CAE USING PRO-MECHANICA**

**Fees: Rs 15,000/-**

**Duration: 160 hrs**

**Syllabus of CAD Using Pro/E Plus Pro/Mechanica**

**Basic Mechanics:** Static Structural Analysis, Modal Analysis, Buckling and Steady state Thermal.

**Advanced Mechanics:** Vibrational Analysis, Dynamic and Time involving Analysis.

**Post-Processing Using Pro/E.**

## **4.MOLD PROGRAMMES**

### **4.1 UNIGRAPHICS MOLD WIZARD**

**Fees: Rs 10,000/-**

**Duration: 80 hrs**

Refreshing the **part modeling, assembly and drafting.**

**Mold wizard:** Loading Product, Family Mould, Shrinkage, Work piece, Layout, Mould Tools, Parting, Mould Base, Standard Parts, Slider lifter, Ejector pin, Runner, Gate, Cooling, Insert, Electrode, Mold trim, Bill of material, Mould Drawing.

**Prerequisite: Unigraphics & Mold Design Knowledge**

### **4.2 CAD USING UNIGRAPHICS WITH MOLD WIZARD**

**Fees: Rs 15,000/-**

**Duration: 160 hrs**

**Syllabus of CAD Using Unigraphics**

**Mold wizard:** Loading Product, Family Mould, Shrinkage, Work piece, Layout, Mould Tools, Parting, Mould Base, Standard Parts, Slider lifter, Ejector pin, Runner, Gate, Cooling, Insert, Electrode, Mold trim, Bill of material, Mould Drawing.

**Prerequisite: Mold Design Knowledge.**

### **4.3 CAD/CAM USING UNIGRAPHICS WITH MOLD WIZARD**

**Fees: Rs 24,000/-**

**Duration: 260 hrs**

**Syllabus of CAD/CAM Using Unigraphics**

**Mold wizard:** Loading Product, Family Mould, Shrinkage, Work piece, Layout, Mould Tools, Parting, Mould Base, Standard Parts, Slider lifter, Ejector pin, Runner, Gate, Cooling, Insert, Electrode, Mold trim, Bill of material, Mould Drawing.

**Prerequisite: Mold Design Knowledge.**

#### **4.4 PRO/MOLD**

**Fees: Rs 10,000/-**

**Duration: 80 hrs**

Refreshing the **part modeling, assembly and drafting.**

**Pro/Moldesign:** Introduction, Mold design sequence, Reference & work pieces, Draft Checking, Applying Shrinkage, Creation Of Parting Surface, Splitting to Volume, Runner & Waterlines, Molding, Mold Opening Process, Mold Layout, Injection Molding Machine, Catalogs.

**Prerequisite: Pro/E & Mold Design Knowledge.**

#### **4.5 CAD USING PRO/E WITH PROMOLD**

**Fees: Rs 15,000/-**

**Duration: 160 hrs**

**Syllabus of CAD Using Pro-E**

**Pro/Mold:** Introduction, Mold design sequence, Reference & work pieces, Draft Checking, Applying Shrinkage, Creation Of Parting Surface, Splitting to Volume, Runner & Waterlines, Molding, Mold Opening Process, Mold Layout, Injection Molding Machine, Catalogs

**Prerequisite: Mold Design Knowledge.**

#### **4.6 CAD/CAM USING PRO/E WITH PROMOLD**

**Fees: Rs 24,000/-**

**Duration: 260 hrs**

**Syllabus of CAD/CAM Using Pro-E**

**Pro/Mold:** Introduction, Mold design sequence, Reference & work pieces, Draft Checking, Applying Shrinkage, Creation Of Parting Surface, Splitting to Volume, Runner & Waterlines, Molding, Mold Opening Process, Mold Layout, Injection Molding Machine, Catalogs

**Prerequisite: Mold Design Knowledge.**

### **5. MULTI software PROGRAMMES - (20% concession)**

Selection of More than one Programme from Sl. No 1 to 4

## 6. SPECIAL PROGRAMME

### 6.1 CAD/CAM USING CATIA WITH REVERSE ENGINEERING

**Fee: Rs 24000 /-**

**Duration: 260 hrs**

**Part Modeling:** Introduction to GUI, Sketcher, Constraints, sketch-based features, Dress up features, Transformation features, Associating bodies with Boolean Operations, Reference Elements, Modifying Features.

**Assembly Design:** Creating assembly, Manipulating components in assembly, Assembly constraints, Exploded view, Clash checking, Assembly features, Scene creation, Using Mechanical Standard parts, Top Down Assembly.

**Drafting:** Generative Drafting, Interactive Drafting, Creating Views, Sections, and BOM Generation.

**Surface Design:** Wire frame geometry creation, Basic surface, Operations on surface, advanced surface, Surface based features in Part design.

**Sheet metal:** Introduction, Sheet Metal Parameters, Creating the Side Walls, Cutout, Automatic Bends.

**Mold Design:** Core cavity separation, Basic mold design.

**Manufacturing:** Basic Tasks, Part operations, Programs & Processes, Managing Manufacturing Entities, Verification, Simulation and NC Code generation.

**Reverse Engineering:** Basics concept, theoretical method of reverse engineering, Training on conventional measuring method, training on CMM, digitized shape editor, generative shape design, Quick surface reconstruction, free style, and project work.

#### SHIF TIMINGS for all above said courses

Timing	No. of working hours
06:00 A.M to 10:00 A.M	4 Hours
06:00 A.M to 02:00 A.M	8 Hours
06:00 A.M to 06:00 P.M	12 Hours
06:00 A.M to 10:00 P.M	16 Hours
02:00 P.M to 10:00 P.M	8 Hours
06:00 P.M to 10:00 P.M	4 Hours
06:00 A.M to 06:00 P.M	Saturday Batch (12 hours)
06:00 A.M to 06:00 P.M	Saturday & Sunday Batch (12 hours)
10:00 P.M to 06:00 A.M	8 hours - Night Batch (Monday to Saturday)

### Concession in Course Fee# (From Sl. No.1 to 4 &6)

SC/ST/BC/MBC/Physically Challenged	: 10%
Fresh Diploma Holders / Engineers	: 10%
Women	: 15%
Students (Colleges/Polytechnics) & Alumni of CIPET	: 20%
Night Batch (All candidates) -(10:00 PM to 6:00 AM)	: 25%
CIPET Students/Trainees (LTC)	: 50%
# conditions apply	

**7. PLACEMENT ASSISTED PROGRAMMES\*\***  
**(Full time – 8 hrs / day (1<sup>st</sup> or 2<sup>nd</sup> shift))**

**7.1 Masters Programme in Product Development with  
CAD/CAM/CAE (Full time – 8 hrs / day)**  
Course code: MPPD-CAD

Fee: Rs.75000/-

Duration: 4Months

**Course contents:** 4 softwares

**MODULE- I (ALL software)**

As per Sl. No.2 [CAD/CAM Programmes (Pro-E, UG & CATIA)] plus As per Sl. No. 4 [Mold Programmes]

**MODULE -II (Any ONE software)**

Ansyz/Hyperworks/LS-Dyna /Moldflow

**MODULE –III (Project Work)**

**MODULE -IV (Theory Classes)**

Plastics Product & Mould Design, Jigs&Fixtures, Sheet Metal, CNC, CBT, Rapid Prototyping and Reverse Engineering.

**Course Highlights**

\*Latest Software \* Balanced Theory & Practical Classes \*Product Development Concepts \* Personality Development Programme \* Certificate awarded by CIPET.

**Eligibility:** Diploma / Degree in Mechanical/Production/Polymer/Auto mobile/Aeronautical/Tool engineering/equivalent candidates aspiring to start the career in R&D and product development.

**7. 2 Advanced Masters Programme in CAD/CAM/CAE (Full time)**  
Course code: AMP-CAD

Fee: Rs. 90,000/- Duration: 4 months + two months in-plant training

Stipend: Rs. 5000/- per month during the first 4 months training programme]

**Date of written test/ interview /admission :** Last Monday of Everymonth

**Course commencement :** Subsequent First Monday of Everymonth

**Written test venue :** CIPET, Guindy, Chennai

**Course contents:** 4 softwares

**MODULE- I (ALL software)**

As per Sl. No.2 [CAD/CAM Programmes (Pro-E, UG & CATIA)] plus As per Sl. No. 4 [Mold Programmes]

**MODULE -II** (Any ONE software)  
Ansys/Hyperworks/LS-Dyna /Moldflow

**MODULE -III** (Project Work)

**MODULE -IV** (Theory Classes)  
Plastics Product & Mould Design, Jigs&Fixtures, Sheet Metal, CNC, CBT, Rapid Prototyping and Reverse Engineering.

**Course Highlights**

\*Latest Software \* Balanced Theory & Practical Classes \*Product Development Concepts \* Personality Development Programme \* Certificate awarded by CIPET.

**Eligibility:** Degree in Mechanical/Production/Polymer/Auto mobile/Aeronautical/Tool engineering/equivalent candidates aspiring to start the career in R&D and product development.

**Selection:** Eligible candidates have to appear in the entrance exam and the short listed candidates will be interviewed for final selection.

**7.3 INTEGRATED ENGINEERING SOFTWARE PROGRAMME  
ON AUTOMOBILE & AEROSPACE PRODUCT DEVELOPMENT WITH  
CAD/CAM/CAE (Full Time)**  
(Course code: IES - PAAP -CAD)

Fee: Rs.1.0 lakh; **Duration: 6 months** ► **Stipend: Rs. 5000/- p.m during training for 6 months**

**Date of written test/ interview /admission** : Last Monday of Everymonth

**Course commencement** : Subsequent First Monday of Everymonth

**Written test venue:** CIPET, Chennai

**Course contents: 7 SOFTWARES**

**MODULE- I** (ALL software)

As per Sl. No.2 [CAD/CAM Programmes (Pro-E, UG & CATIA)] plus As per Sl. No. 4 [Mold Programmes]

**MODULE -II** (ALL software)  
Ansys/Hyperworks/LS-Dyna /Moldflow

**MODULE -III**(Project Work)

**MODULE -IV** (Theory Classes)  
Plastics Product & Mould Design, Jigs&Fixtures, Sheet Metal, CNC, CBT, Rapid Prototyping and Reverse Engineering.

**Course Highlights**

→Latest Software →Balanced Theory & Practical Classes →Product Development Concepts →  
Personality Development Programme → Certificate awarded by CIPET.

**Eligibility:** B.E/B.Tech/M.E/M.Tech in Mech./Prodn/Auto/Aero/Polymer/Plastics/Tool /Die Making or equivalent

**Written test venue:** CIPET, Chennai

**Selection:** Eligible candidates have to appear in the entrance exam and the short listed candidates will be interviewed for final selection.

\*\* Conditions apply.

### **8. Tailor Made Programmes CORPORATE Personals on 'CAD/CAM/CAE Softwares'**

Course Fee, Duration, Period, Syllabus will be decided on mutual discussion

#### **FOR FURTHER DETAILS / HOW TO APPLY:**

e-mail/write/send to:

**cadcamcaecipetchennai@yahoo.com**  
**cipetchn@eth.net**

The Deputy Director, CIPET, Guindy, Chennai – 600 032

Ph: 044-22254701 – 706 (6 lines), Extn: 540, 470, 700; 044-22254709

Fax: 044-22254707, **Mobile: 09677123886**

[www.cipet.gov.in](http://www.cipet.gov.in)

#### **Mode of Payment**

- 1. Cash at Accounts Section , CIPET, Chennai (or)**
- 2. Demand Draft in favour of CIPET, Chennai**

Alongwith **REGISTRATION FORM** which is to be obtained in person at  
CAD/CAM/CAE centre.

**However advance registration can be done for admission in Sl. No. 1 to 6 and 7.1  
with requisition letter addressed to:  
DEPUTY DIRECTOR, CIPET, Guindy, Chennai – 600 032**