# **Govt.of India – Skill Development Training Programmes**

SI. No	Title of Course	Duration	Course Fee (Tax Extra @18%)	
A) JOB ORIENTED PROGRAMME ** (FULL TIME ONLY SI:No-01, 02, 03) (FULL TIME / PART TIME SI:No-04)				
01	Professional Programme in Product Design with Additive Manufacturing (PAM) ** - (OS Software's with Expertise on Additive Mfg + Industry oriented Learning's + Practical's on Machine) Training on CNC-5 Axis, Reverse Engg, 3D Scanning & 3D Printing (FDM,SLS,SLM,SLA,MJF etc.,) Engineering Graphics Practical + AutoCAD + Any two CAD / CAM Software + Any two CAE Software. (M.E / B.E pass-out without current arrear and above 6.0 CGPA is must to join) (Eligibility :- Mech / Auto / Aero / Polymer / Chem / Mfg / Prod / Mfg / Mechatro / Petrochem / Tool or Equivalent}	06 Months	Rs.90,000*	
02	Integrated Programme in Engineering Design Innovation (PDI) ** - (07 Software's with Expertise on Design & Analysis + Industry oriented Learning's + Practical's on Machine) Engineering Graphics Practical + AutoCAD + Any three CAD / CAM Software + Three CAE Software. (M.E / B.E pass-out without current arrear and above 6.0 CGPA is must to join) (Eligibility :- Mech / Auto / Aero / Polymer / Chem / Mfg / Prod / Mfg / Mechatro / Petrochem / Tool or Equivalent}	06 Months	Rs.80,000*	
03	Master Programme in CAD / CAM / CAE (MPC) ** - (06 Software's + Industry oriented Learning's + Practical's on Machine) Engineering Graphics Practical + AutoCAD + Any Three CAD / CAM Software + Any two CAE Software. (DIPLOMA pass-out without current arrear and above 60% is must to join) {Eligibility :- Mech / Auto / Polymer / Tool & Die / Prod / Mechatro / Mould / Plastics or Equivalent}	05 Months	Rs.65,000*	
04	Master Programme in Plastics Product & Mould Design (MPM) ** - (03 Software's + Plastics Product & Mould Design +Industry oriented Learning's + Practical's on Machine) Engineering Graphics Practical + AutoCAD + UG-Nx & Mold Flow (B.E / DIPLOMA / ITI – Pass out) / Working Professional from Manufacturing allied sectors {Eligibility :- Mech / Auto / Polymer / Mould / Plastic / Tool & Die / Prod / Draughtsman or Equivalent}	04 Months	Rs.60,000*	
B) SPECIALIZED SKILL DEVELOPMENT PROGRAMME OFEES CONCESSON) (FULL TIME / PART TIME)				
05	Advanced Certificate Course in Product Design (ACCP) - AutoCAD + Any Two CAD / CAM / CAE Software + Classes on (Product Design , GD&T) {Eligibility :- M.E / B.E / DIPLOMA Pass out - Mech / Auto / Aero / Mfg / Prod / Mechatro / Chem / Plastic or Equivalent }	600 Hours	Rs.50,000	
06	Advanced Certificate Course in CAD / CAE (ACCC) - Any One CAD / CAM Software + Hyper Works & Ansys + Classes on (GD&T, FMEA,DFMA) {Eligibility :- M.E / B.E / DIPLOMA Pass out - Mech / Auto / Aero / Mfg / Prod / Mechatro / Chem / Plastic or Equivalent }	600 Hours	Rs.50,000	
C) PROGRAMME FOR CURRENT STUDENTS (# FEES CONCESSION: Group of 05 or above@10% & 10 or above@15% (PART TIME)				
07	Advanced Studies on Product Development Using CAD/CAM/CAE (APDC) # - AutoCAD+ Any 02-CAD/CAM & 01-CAE or 01-CAD/CAM & 02-CAE Software + Machines Practical Engineering Graphics Practical + NPD Concepts {Eligibility:- B.E / B.TECH 3" and 4" Year / DIPLOMA 3" Year - Mech/Auto/Aero/Mechatro / Mfg / Plastics or Equiv }	720 Hours	Rs. 42,000	
08	Certificate Course in Computer Aided Design & Drafting (CADD) # - Engineering Graphics Practical + AutoCAD + Any One CAD / AMN Software. {Eligibility: = Bz/B.JEcA/ Opiolema / ITI - ANY CORRENT 5TUDENTS }	360 Hours	Rs. 28,000	
09	CAE Using HYPERWORKS (or) ANSYS / CAE Using MOLDFLOW #	200 / 160 Hours	Rs. 14,000	
D) PROGRAMME FOR WORKING PROFESSIONALS (NO FEES CONCESSION) - (FULL TIME / PART TIME)				
10	PLASTICS PRODUCT DESIGN Using - CATIA / NX / CREO / SOLIDWORKS with GD&T	240 Hours	Rs.28,000	
11	CAD / CAM Using SOLID WORKS with MASTERCAM (or) UNIGRAPHICS (or) CREO (or) CATIA	200 Hours	Rs.20,000	
12	CAE Using HYPERWORKS (or) ANSYS / CAE Using MOLDFLOW	200/160 Hours	Rs.18,000	
*10% FEES Discount on Course Fee for the candidates having 7.5 CGPA or Equivalent in Percentage for SI.No – 1 to 4 **PLACEMENT ASSISTANCE will be provided in various industries. Job opportunity will be given to perform in CIPET – Chennai on Contract basis to get experience & exposure with applied conditions for eligible candidates. Theory :-				

SI.No: 01 - (a) NPD Concepts (b) GD&T (c) CNC (d) RE (e) RPT (f) DFMA (g) Green Manufacturing (h) Industry 4.0
SI.No: 02 - (a) NPD Concepts (b) GD&T (c) CNC (d) Innovative Materials (e) FMEA (f) Product Validation
SI.No: 03 - (a) NPD Concepts (b) GD&T (c) CNC (d) Metrology & Inspection
SI.No: 04 - (a) NPD Concepts (b) CNC (c) Metrology & Inspection (d) Plastics Product Design (e) Mould Design (f) Plastics Materials

# COURSE HIGHLIGHT

🗸 One Man - One Machine 🖌 Flexible Class Timing 🖌 Certificate Awarded By CIPET, Govt.of India

✓ Balanced Theory & Practical Classes ✓ New Product Development Concepts ✓ Personality Development Programme





# सिपेट : पेट्रोकेमिकल्स तकनीकी संस्थान (आई पी टी) CIPET : INSTITUTE OF PETROCHEMICALS TECHNOLOGY (IPT)

Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India, Guindy, Chennai-600 032.

# CAD/CAM/CAE CENTRE

# **CONTACT DETAILS**

**THE PRINCIPAL DIRECTOR & HEAD,** CIPET: IPT, T.V.K. INDUSTRIAL AREA , GUINDY, CHENNAI – 600 032.  
 Contact No
 : 044-22254701
 Extn: 470 & 480

 Mobile
 : 9943323347, 7358382001.

 Whatsapp
 : 99-433-233-47 (08:00.A.M to 08:00.P.M)

 Email
 : cadcamcae-chennai@cipet.gov.in

 Web Site
 : www.cipet.gov.in

# **SCAN QR FOR DETAILS**

COURSES / HOSTEL / PLACEMENT



FEES ONLINE PAYMENT



# **REGISTRATION DETAILS:**

Direct Admissions On All Days - 9:00 A.M to 5:00 P.M.

Payment has to be made by Online Transaction / DD in the name of

**CIPET** payable at **CHENNAI**.

\*Hostel facility available on Chargeable basis.



# ADDITIVE MANUFACTURING CONTENTS – for SI.No.01 (PAM) Duration: 200 Hrs

Reverse Engineering & 3D Modeling: Introduction- 3D Scanning Techniques -White light or Blue light scanner - Hands on practice - Reverse Engineering Modeling using RE Software- Hands on practice -Report Submission on 3D modeling from scanned 3D part.

Additive Manufacturing(3D Printing) : Data Preparation- Import data types and formats- Review of CAD Modeling techniques- Repair, edit and enhance suitable for RPT-Processing the CAD data in catalyst software - Selection of Orientation - Support Generation - Sending the tool path to RPT machine & Print -Removing the support structure and Post Processing Techniques- Demo-on : FDM, SLS, SLA, MJF, SLM and Vacuum casting - Project Report

# PLASTICS PRODUCT & MOULD DESIGN CONTENTS - for SI.No.04 (MPM) Duration: 360 Hrs

Plastics Product Design: Review of Engineering Graphics Practice - Plastic Materials, Properties, Processing methods, Optimizing, Moulding Defects & Trouble Shooting, Product Design Features- Wall Thickness-Ribs-Bosses-Gussets-Undercuts-Draft-Holes-Threads-Structural Considerations, Stiffness, Impact, Design for Assembly, Press Fits, Snap Fit, Insert Moulding, Welding, Post Moulding process, Flow -qate & runner concepts, Important parameters and checklist of product design, Feasibility Report Preparation (DFM)

Design of Injection Mould: Introduction- Mould classifications -Nomenclature and function of mould components -Mould Details - Design Steps and process -Cavity & Core Designing -Runner Systems -Gate Types - Ejector systems -Interlocks - Mould actions and Undercuts - Unscrewing Mould - Shrinkage of plastics in Mould - Design Plastic part Analysis - calculations in Mould design- Mould Design Practice. Concepts of various Moulds : Blow Mould Design - Compression Mould Design - Review on Extrusion Dies . Rotational Mould . Thermoforming and vacuum forming.

# PLASTICS PRODUCT DESIGN using CATIA / NX / CREO / SOLIDWORKS with GD&T- (for SI.No. 11)

## Duration: 240 Hrs

Fee: Rs. 28.000/- + Tax @18%

Plastic Product Design: Plastic Materials, Properties, Processing methods, Optimizing, Moulding Defects & Trouble Shooting, Product Design Features- Wall Thickness-Ribs-Bosses-Gussets-Undercuts-Draft-Holes-Threads-Structural Considerations, Stiffness, Impact, Design for Assembly, Press Fits, Snap Fit, Insert Moulding, Welding, Post Moulding process, Flow-gate & runner concepts, Important parameters and checklist of product design, Feasibility Report Preparation (DFMA), GD & T: Limits, Fits & Allowances , Tolerances, GD &T Basis Symbols, Datum Featrues, Material Condition & Size Control Form

### CAD/CAM USING SOLIDWORKS with MASTERCAM

#### Duration: 200 Hrs

Fee: Rs. 20,000/- + Tax @18%

Modeling: Introduction, Pull down menus, 2D sketching, Part Modeling, Constructing Features, Editing Features, Symmetry & Drafting, Patterning, Revolved Features, Shelling & Ribs, Multi-Body Design Techniques, 3D sketching, Library features, Boundary features, Advanced modeling features.

Surface Modeling: Hybrid modeling, Repairing and Editing, Blends & patches, Advanced Surface modelina.

Drafting: Generative and Interactive Drafting, Stages, Annotations, Dimensioning, Detailing Techniques, Performance and Display.

Assembly Design: Top-Up, Bottom-Up, Degrees of Freedom, Advance Mate Techniques, Editing Methods, Large Assemblies, Facility Layout, BOM, Tables.

Sheet Metal: Basic flange Features, Sheet metal Techniques, Multi body Sheet parts, Converting to sheet, forming tool and gussets, Table making.

MASTERCAM Contents: Introduction to MASTERCAM ,Product Introduction, Basic concepts of CAM (cutters, machines job setup, etc), Creating 2D drawings, Creating 2D tool paths, Creating 3D models(Solid & Surface) Creating 3D tool paths, Creating2D Drawings, Line, Arc, Rectangle, Fillet, Chamfer, Point, Polygon, Rectangle shapes, XForm, Trim, Break, Drafting, Analyzing. Creating 2D Tool paths, Pocket, Contour, Facing, Drilling, Transforming 2D tool paths(Translate, Rotate, Mirror), Hole milling, slot milling and helical milling tool paths, Back plot, Verification, Post processing. Creating 3D Models , Extrude, Revolve , Fillet, Chamfer, Sweep, Thicken, Ruled, Boolean operations(Add, Subtract, Common), Converting Solid to Surface, Surface to Solid, Surface modeling tools (Ruled, Extrude, net, fence, trim, split, removing boundary, fill, holes, flat boundary) Creating 3D Tool paths , boundary box, Orientation, Analyzing, cutting methods Back plot, Verification, Gouge checking, Post-processing & Editing.

# CAD/CAM USING UNIGRAPHICS-NX

Duration: 200 Hrs

Modeling: 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: Dwg sheets, Views, Dimensioning, Annotations, Symbols, Tab-note & Part list.

Direct Modeling, Free form feature: Sheets from points, Making sheets from variable cross sections, Bridging, Offsetting, Filleting & Trimming sheet

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 & Contour milling Operations & Post Processing.

#### CAD/CAM USING CREO

#### Duration: 200 Hrs

#### Fee: Rs. 20,000/- + Tax @18%

Fee: Rs. 20,000/- + Tax @18%

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

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

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

Creo/Surface: Creat Surface Feature, Trimming Quilts, Flattening & Bending, Creating Solid Geometry -Quilt, Freeform Surfaces, Boundary, Conic surface & N-sided patch, style

Creo/Sheet metal: Introduction creates conversion, wall and Rib, cut, form, flatten form, notch punch, and bend, unbend, bend back, corner relief, deform, edge bend.

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

# **CAD/CAM USING CATIA**

#### Duration: 200 Hrs Fee: Rs. 20.000/- + Tax @18%

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 Surface Design: Wire frame geometry creation, Basic surface, Operations on surface, advanced surface, Surface based features in Part design, Power copy, Close volume.

Sheet metal: Sheet Metal Parameters. Creating the side walls. Cutout, Automatic bends.

Kinematics: Mechanical System Design, Mechanism representation, Mechanic player, Engineering Connection definition.

Mold Design: Core - Cavity separation, Basic mold design.

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

# **CAE USING HYPERWORKS**

## Duration: 200 Hrs

## Fee: Rs. 18,000/- + Tax @18% Hyper mesh: 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.

# CAE USING ANSYS

# Fee: Rs. 18.000/- + Tax @18%

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

Duration: 200 Hrs

Duration: 160 Hrs

Modeling: Creating Solid model, Finite element modeling and importing models, Select Entities Component manager, Space claim, Geometry Clean up.

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, Transient Thermal.

Rigid Body Dynamics: Joint Loads, Types of Joints, Remote Displacement.

Explicity Dynamics: Impact Analysis, Rigid and Flexible analysis.

ANSYS Workbench: Simulation, CFX Mesh, CFX fluent, Engg Datasheet &FE modeler.

### CAE USING MOLDFLOW

#### Fee: Rs. 18.000/- + Tax @18%

Introduction to CAE: Basics of Plastics Product Design, Mold flow Modeling, Mesh Creation, Mesh Checking, Surface repair tools, Creating Feed system & Cooling System,

Meshing Tools: Create node, curves, regions, move/copy, nodal mesh tools, edge mesh tools Mid plane& 3D Solid.

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

# **AutoCAD**

AutoCAD: Introduction, industrial application, interface, coordinate system, Introduction to drafting, curve creation, use of functional key, Utilization of Layer, block, W block, attribute edit, text Creation methods, UCS movement, 3d visualization, photo, realistic rendering, Print Setup, Tool Bars - Standard, Draw, Modify, Dimension, Layers, Properties.

#### **CAM USING POWERMILL**

Introduction- DelCAM GUI, Work plane set up, wire frame modeler, data exchange, define Work planes, Machining simulation, Wire frame modeler, Create process sheet, Setup for machining, Define boundaries for machining, define block, measurement, 3D area Clearance Strategies 3D-offset finishing, Constant Zfinishing ,Optimized constant z-finishing, Surface finishing, 2D-curve area clearance,Drilling ,Post processor selection

# **ONLINE MODE TRANSACTION DETAILS** (GPAY, NEFT, IMPS, UPI)

Bank Name	: CANARA BANK
Account Number	: 12-00-27-74-99-15
IFSC Code	: CNRB0000909
Branch	: GUINDY,CHENNAI.
Account Name	: CIPET IPT

# **ADMISSION PROCEDURE**

Submit copies (02 Nos.) of the following :

**1.) Aadhaar Card** 

- **2.) Course Completion Certificate**
- 3.) Overall / Past Year Mark Sheet
- 4.) Passport & Stamp Size Photo