

CATIA Syllabus

1: INTRODUCTION TO CATIA

Introduction to CATIA

CATIA Workbenches

System Requirements

Getting Started with CATIA

Important Terms and Definitions

Understanding the Functions of the Mouse Buttons

Toolbars

Hot Keys

Color Scheme

2: DRAWING SKETCHES IN THE SKETCHER WORKBENCH-I

The Sketcher Workbench

Starting a New File

Invoking the Sketcher Workbench

Invoking the Sketcher Workbench Using the Sketch Tool

Invoking the Sketcher Workbench Using the Positioned Sketch Tool

Setting the Sketcher Workbench

Modifying Units

Modifying the Grid Settings

Understanding Sketcher Terms

Specification Tree

Grid

Snap to Point

Construction/Standard Element

Select Toolbar

Inferencing Lines

Drawing Sketches Using Sketcher Tools

Drawing Lines

Drawing Center Lines

Drawing Rectangles, Oriented Rectangles, and Parallelograms

Drawing Rectangles

Creating Points

Drawing Circles

Drawing Arcs

Drawing Profiles

Drawing Display Tools

Fit All In

Pan

Zoom In

Zoom Out

Zoom Area

Normal View

Splitting the Drawing Area into Multiple Viewports

Hiding and Showing Geometric Elements

Swapping Visible Space

3: DRAWING SKETCHES IN THE SKETCHER WORKBENCH-II

Other Sketching Tools in the Sketcher Workbench

Drawing Ellipses

Drawing Splines

Connecting Two Elements by a Spline or an Arc

Drawing Elongated Holes

Drawing Cylindrical Elongated Holes

Drawing Keyhole Profiles

Drawing Hexagons

Drawing Centered Rectangles

Drawing Centered Parallelograms

Drawing Conics

Editing and Modifying Sketches

Trimming Unwanted Sketched Elements

Extending Sketched Elements

Trimming by Using the Quick Trim Tool

Filleting Sketched Elements

Chamfering Sketched Elements

Mirroring Sketched Elements

Mirroring Elements without Duplication

Translating Sketched Elements

Rotating Sketched Elements

Scaling Sketched Elements

Offsetting Sketched Elements

Modifying Sketched Elements

Deleting Sketched Elements

4: CONSTRAINING SKETCHES AND CREATING BASE FEATURES

Constraining Sketches

Concept of Constrained Sketches

Iso-Constraint

Under-Constraint

Over-Constrained

Inconsistent

Not Changed

Applying Geometrical Constraints

Applying Geometrical Constraints Automatically

Applying Additional Constraints to the Sketch

Applying Dimensional Constraints

Applying Contact Constraints

Applying Fix Together Constraints

Applying Auto Constraints

Editing Multiple Dimensions

Analyzing and Deleting Over-Defined Constraints

Analyzing Sketch using the Sketch Analysis Tool

Exiting the Sketcher Workbench

Creating Base Features by Extrusion

Creating a Thin Extruded Feature

Extruding the Sketch Using the Profile Definition Dialog Box

Extruding the Sketch along a Directional Reference

Creating Base Features by Revolving Sketches

Creating Thin Shaft Features

Dynamically Rotating the View of the Model

Rotating the View Using the Rotate Tool

Rotating the View Using the Compass

Modifying the View Orientation

Display Modes of the Model

Shading (SHD)

Shading with Edges

Shading with Edges without Smooth Edges

Shading with Edges and Hidden Edges

Shading with Material

Wireframe (NHR)

Customize View Parameters

Creating Sections Dynamically

Maneuvering the Section Plane

Position of Section Planes

Assigning a Material to the Model

5: REFERENCE ELEMENTS AND SKETCH-BASED FEATURES

Importance of Sketching Planes

Reference Elements

Reference Planes

Creating New Planes

Creating Points

Creating Reference Lines

Other Sketch-Based Features

Creating Drafted Filleted Pad Features

Creating Multi-Pad Features

Feature Termination Options

Creating Pocket Features

Creating Drafted Filleted Pocket Features

Creating Multi-Pocket Features

Creating Groove Features

Extruding and Revolving Planar and Non-planar Faces

Projecting 3D Elements

6: CREATING DRESS-UP AND HOLE FEATURES

Advanced Modeling Tools

Creating Hole Features

Creating Fillets

Creating Chamfers

Adding a Draft to the Faces of the Model

7: EDITING FEATURES

Editing Features of a Model

Editing Using the Definition Option

Editing by Double-Clicking

Editing the Sketch of a Sketch-Based Feature

Redefining the Sketch Plane of Sketches

Deleting Unwanted Features

Managing Features and Sketches by using the Cut, Copy,
And Paste Functionalities

Understanding the Concept of Update Diagnosis

Cut, Copy, and Paste Features and Sketches

Copying Features Using Drag and Drop

Copying and Pasting Part Bodies

Deactivating Features

Activating Deactivated Features

Defining Features in Work Object

Reordering Features

Understanding the Parent-Child Relationships

Measuring Elements

Measuring between Elements

Measuring Items

Measuring Inertia

8: TRANSFORMATION FEATURES AND ADVANCED MODELING TOOLS-I

Transformation Features

Translating Bodies

Rotating Bodies

Creating Symmetry Features

Transforming the Axis System

Mirroring Features and Bodies

Creating Rectangular Patterns

Creating Circular Patterns

Creating User Patterns

Uniform Scaling of Model

Non-uniform Scaling of Model

Working with Additional Bodies

Inserting a New Body

Inserting Features in the New Body

Applying Boolean Operations to Bodies

Adding Stiffeners to a Model

Generating Solid Combine

9: ADVANCED MODELING TOOLS-II

Advanced Modeling Tools

Creating Rib Features

Creating Slot Features

Creating Multi-Sections Solid Features

10: WORKING WITH THE WIREFRAME AND SURFACE DESIGN WORKBENCH

Need of Surface Modeling

Wireframe and Surface Design Workbench

Starting the Wireframe and Surface Design Workbench

Creating Wireframe Elements

Creating Circles

Creating Splines

Creating a Helix

Creating Surfaces

Creating Extruded Surfaces

Creating Revolved Surfaces

Creating Spherical Surfaces

Creating Cylindrical Surfaces

Creating Offset Surfaces

Creating Sweep Surfaces

Creating Fill Surfaces

Creating Multi-Sections Surfaces

Creating Blended Surfaces

Operations on Shape Geometry

Joining Surfaces

Splitting Surfaces

Trimming Surfaces

11: EDITING AND MODIFYING SURFACES

Surface Operations

Creating Projection Curves

Creating Intersection Elements

Healing Geometries

Disassembling Elements

Untrimming a Surface or a Curve

Creating Boundary Curves

Extracting Geometry

Transformation Features

Extrapolating Surfaces and Curves

Splitting a Solid Body with a Surface

Solidifying Surface Models

Adding Thickness to a Surface

Creating a Solid Body from a Closed Surface Body

Sewing a Surface to a Solid Body

12: ASSEMBLY MODELING

Assembly Modeling

Types of Assembly Design Approaches

Creating Bottom-up Assemblies

Inserting Components in a Product File

Moving Individual Components

Applying Constraints

Creating Top-down Assemblies

Creating Base Part in the Top-Down Assembly

Creating Subsequent Components in the Top-Down Assembly

Creating Subassemblies in the Top-Down Assembly

Editing Assemblies

Deleting Components

Replacing Components

Editing Components inside an Assembly

Editing Subassemblies inside an Assembly

Editing Assembly Constraints

Simplifying the Assembly

Interference Detection

Sectioning an Assembly

Exploding an Assembly

13: WORKING WITH THE DRAFTING WORKBENCH-I

The Drafting Workbench

Starting a New File in the Drafting Workbench

Type of Views

Generating Drawing Views

Generating Views Automatically

Generating Individual Drawing Views

Generating the Exploded View

Working with Interactive Drafting in CATIA

Editing and Modifying Drawing Views

Changing the Scale of Drawing Views

Modifying the Project Plane of the Parent View

Deleting Drawing Views

Rotating Drawing Views

Hiding Drawing Views

Modifying the Hatch Pattern of Section Views

14: WORKING WITH THE DRAFTING WORKBENCH-II

Inserting Sheets in the Current File

Inserting the Frame and the Title Block

Automatic Insertion of the Frame and the Title Block

Creating the Frame and the Title Block Manually

Adding Annotations to the Drawing Views

Generating Dimensions

Adding Reference Dimensions

Adding Datum Features

Adding Geometric Tolerance to the Drawing Views

Adding Surface Finish Symbols

Adding Welding Symbols

Applying Weld

Editing Annotations

Generating the Bill of Material (BOM)

Generating Balloons

15: WORKING WITH SHEET METAL COMPONENTS

The Sheet metal Component

Starting a New File in Generative Sheet Metal Workbench

Setting Sheet Metal Parameters

Parameters Tab

Bend Extremities Tab

Bend Allowance Tab

Introduction to Sheet Metal Walls

Creating the Base Wall

Creating the Wall on Edge

Creating Extrusions

Creating Swept Walls

Creating Flanges on the Sheet Metal Component

Creating Hems on the Sheet Metal Component

Creating a Tear Drop on the Sheet Metal Component
 Creating a User Flange on the Sheet Metal Component
 Creating a Bend
 Creating a Conical Bend
 Bend From Flat
 Creating Rolled Walls
 Creating a Hopper Wall
 Creating a Rolled Wall
 Folding and Unfolding Sheet Metal Parts
 Unfolding Sheet Metal Parts
 Folding Unfolded Parts
 Mapping the Geometry
 Creating Flat Patterns of Sheet Metal Components
 Viewing a Sheet Metal Component in Multiple Windows
 Using Views Management
 Stamping
 Creating a Surface Stamp
 Creating a Bead Stamp
 Creating a Curve Stamp
 Creating a Flanged Cut out Stamp
 Creating a Louver Stamp
 Creating a Bridge Stamp

Creating a Flanged Hole Stamp

Creating a Circular Stamp

Creating a Stiffening Rib Stamp

Creating a Dowel Stamp

16: DMU KINEMATICS (Optional)

Introduction to DMU Kinematics

Designing a Mechanism

Creating the Revolute Joint

Creating the Prismatic Joint

Creating the Cylindrical Joint

Creating the Screw Joint

Creating the Rigid Joint

Creating the Spherical Joint

Creating the Planar Joint

Creating the Point Curve Joint

Creating the Slide Curve Joint

Creating the Roll Curve Joint

Creating the Point Surface Joint

Creating the Universal Joint

Creating the CV Joint

Creating the Gear Joint

Creating the Rack Joint

Creating the Cable Joint

Converting Assembly Constraints into Joints