

## PART 1: CLOUD ECOSYSTEM AND DATA MANAGEMENT

### 1. Data management and introduction

- Data panel: Creating projects, folder hierarchy, and file organization.
- Autodesk Fusion team: Managing data, tracking projects, and accessing files via a web browser.

### 2. Inviting collaborators

- Project members: Inviting teammates as "Editor" or "Viewer."
- Access control: Managing project privacy settings and administrative permissions.

### 3. Cloud-based and collaborative workflow

- Cloud sync: Real-time data synchronization across different devices.
- Concurrent design: Efficient multi-user workflow within the same project environment.

### 4. Data versions and communication

- Version history: Tracking differences between versions and restoring previous stages by using the "Promote" feature.
- Milestones: Flagging and saving critical design stages as official milestones for better project tracking.
- In-design commenting: Adding coordinate-based notes directly onto the design and notifying teammates using @mentions.

## PART 2: INTERFACE, NAVIGATION AND WORKSPACES

### 5. Fusion interface and design methodologies

- Navigation tools: Mastering Orbit, Zoom, Pan, and the ViewCube.
- Design approaches: Differences between Part Design, Assembly Design, and Hybrid design: Combining solid and organic modeling.
- Visual management: Using Component Color Cycling to distinguish complex components.

### 6. Workspace introduction and quick tour

- Design: The core modeling hub (Solid, Surface, Mesh, Sheet Metal, Form).
- Generative Design: AI-powered design optimization and exploration.
- Render: Applying appearances and creating photo-realistic visualizations.
- Animation: Creating exploded views and assembly/disassembly videos.
- Simulation: Testing durability, thermal stress, and mechanical analysis.
- Manufacture: Preparing designs for CNC, Laser, and 3D Printing (CAM).
- Drawing: Converting 3D designs into 2D technical drawings and BOMs.

## PART 3: SKETCHING ENVIRONMENT

### 7. Mastering the sketch workspace

- Create Panel: Line, Rectangle, Circle, Spline, and Slot tools.
- Modify Section: Trim, Extend, Offset, and Mirror commands.
- Constraints: Geometric relationships (horizontal/vertical, tangent, parallel, etc.).
- Sketch palette: Construction lines, linetypes, and the "Look At" feature.
- Practical exercise: Two dimension-driven, fully constrained technical drawings.

## PART 4: ADVANCED MODELING AND APPLICATIONS

### 8. Solid modeling tools

- Create: Extrude, Revolve, Sweep, and Loft techniques and more.
- Modify: Fillet/Chamfer, Shell, Combine, and Draft commands.
- Pattern and mirror: Tools for rapid design repetition and symmetry.
- Construct: Creating offset planes, midplanes, and axes to build geometry in 3D space.
- Inspect menu: Utilizing the measure tool, Section Analysis for internal views, and Zebra Analysis for surface continuity.
- Body and component: Understanding the logic and hierarchy between bodies and components in Autodesk Fusion.

## 9. Surface modeling

- Fundamentals of Patch, Surface Loft, and converting surfaces to solids (Thicken).

## 10. Freeform (Form) modeling (Deep Dive)

- T-Splines environment, "Edit Form" push-pull techniques, and organic shape creation.
- Create Panel: Starting designs with T-Spline primitives, planes, and revolving profiles.
- Modify Panel: Mastering Edit Form for organic manipulation, bridging gaps, and creasing edges.
- Symmetry: Applying Mirror and Circular symmetry to maintain design balance.
- Utilities: Utilizing Display Modes for topology check and Repair Body for solid conversion readiness.

## 11. Project 1: Sketch based Parametric Solid Model

- Dimension-driven object creation using Solid modeling tools.

## 12. Project 2: Hybrid Design Model

- A comprehensive model combining parametric solid structures with ergonomic Freeform aesthetics.

## PART 5: PRESENTATION, ECOSYSTEM

### 13. Rendering workspace details

- Cloud rendering: Generating high-resolution visuals using cloud power.
- Share link (critical): Creating a "Public Link" for project submission; managing web-viewing, sectioning, and measurement permissions.

## Autodesk Fusion Designathon Competition Day - 1

### PART 6: COMPETITION DAY 1 - MODELING AND FINAL BRIEFING

#### 1. Rapid technical refresher

- Quick reminders on Solid, Surface, and Freeform tools, Constraints, Timeline management.

## 2. Project A: Solid modeling exercise

- Modeling a dimension-driven object using Solid modeling tools (structurally similar to the competition theme).

## 3. Project B: Hybrid modeling exercise

- Developing a complex product combining organic Freeform (T-Splines) bodies with functional Solid interfaces.

## 4. Visualization and rendering workflow

- Final application of high-quality Cloud Rendering and validating Share Link settings for jury review.
- Student Experts will complete a submission by entering data to Google participation form such as project links and descriptions to simulate the official competition entry process.

## 5. Autodesk ecosystem and career development

- Community resources: Navigating Autodesk Forums and the Autodesk Gallery.
- Certification: Overview of Autodesk certification types and global recognition.
- Partner finder: Accessing Authorized Training Centers (ATC) and professional support.

## 6. Final Designathon Briefing

- Final review of competition rules, naming conventions, time management, and submission formats.

## 7. Guest session / 2025 Winning Team

- Winning project showcase: A session featuring previous competition winners sharing their design journey and strategy.
- Live model review: Winners will share their screens to demonstrate their Fusion design tree, assembly structure, and modeling techniques.
- Interactive inspection: Sharing the Fusion Public Link via chat, allowing students to explore the winning 3D model in their own browsers in real-time.