

Engineering

Unit C3 – UNIT C3: Physical and Visual Prototyping Tools

Lecture LC3.4 – Physical prototyping of leather goods



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T2.2 – Development of modular
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C3. – Modular Course in
Design Engineering



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Physical and visual prototyping of leather goods

Physical prototyping of leather goods

- Physical prototyping of leather goods is a meticulous and creative process that bridges the gap between concept and final product. It's essential for testing design, functionality, and craftsmanship before committing to full-scale production. Here's how it's



Key Steps in Leather Goods Prototyping

Sketching & Concept Development

- Designers begin with detailed sketches to define the product's form, function, and aesthetic. This includes dimensions, compartments, closures, and



Key Steps in Leather Goods Prototyping

Material Selection

- Choosing the right leather type—full-grain, top-grain, or corrected grain—is critical. Designers also select linings, threads, and hardware like zippers or buckles.



Key Steps in Leather Goods Prototyping

Initial Mockups

- To avoid wasting expensive leather, early prototypes are often made from canvas, cardboard, or PU leather. These mockups help test construction techniques and design



Key Steps in Leather Goods Prototyping

Handcrafting:

- Experienced artisans cut, stitch, and assemble the prototype using traditional leatherworking tools and techniques. Processes like edge painting, burnishing, and embossing are applied to enhance



Key Steps in Leather Goods Prototyping

Rapid Prototyping:

- To accelerate development, some workshops use laser cutting or CNC tools for pattern precision, logo embossing, or hardware placement. This hybrid approach blends artisanal skill with digital efficiency.



Key Steps in Leather Goods Prototyping

Functional Testing:

- Prototypes undergo stress tests—including tensile strength, abrasion resistance, and finish adhesion—to ensure durability and long-term usability. Ergonomic evaluations assess comfort, weight distribution, and accessibility



Key Steps in Leather Goods Prototyping

Client Feedback Loops:

- Physical samples are reviewed by designers, clients, and test users. Feedback on aesthetics, functionality, and comfort informs refinements in design, materials, and construction



What Is Visual Prototyping in Leather Goods?

- It's the digital simulation of leather products—like bags, wallets, belts, or jackets—using 2D and 3D tools to visualize form, texture, stitching, and



What Is Visual Prototyping in Leather Goods?

Visual prototyping allows designers to:

- Create 2D Patterns and 3D Models
- Simulate Textures, Stitching, and Hardware
- Test Proportions, Colorways, and Construction



Techniques & Tools

- 3D Modeling Software: Programs like Rhino, CLO3D, and Fusion 360 allow designers to sculpt leather goods digitally, including folds, seams, and hardware placement.
- Material Simulation: Advanced renderers simulate leather textures—grain, sheen, and flexibility—using photorealistic lighting and surface maps.
- Virtual Sampling: Designers can test colorways, embossing, and branding elements without cutting actual leather.
- Digital Pattern Making: Tools like Adobe

Benefits

- **Faster Iteration:** Designers can test multiple versions of a product—adjusting proportions, materials, and details—without the delays of physical sampling.
- **Cost Savings:** Eliminates the need for early-stage material purchases, tooling, and labor, especially during concept validation.
- **Sustainability:** Reduces material waste, energy consumption, and overproduction by minimizing unnecessary physical prototypes.
- **Client Collaboration:** Digital previews allow clients to visualize custom orders, suggest modifications, and approve designs before fabrication.
- **Marketing-Ready Assets:** High-quality renders can be used for pre-launch campaigns, e-commerce listings, and investor presentations—accelerating brand visibility and consumer engagement.
- **Virtual collaboration:** Facilitates remote collaboration

Industry Insight

- Studios like **Eyestan Leather** offer revolutionary prototyping services that combine digital visualization with handcrafted precision.
- Platforms like **Behance** showcase thousands of leather goods prototypes, offering inspiration and insight into current trends.
- Even **product photographers** now play a role in visual prototyping, capturing design nuances for feedback and refinement.

Real-World Examples

- **Szoneier Leather**

integrates CAD modeling and high-fidelity rendering tools into its design workflow to validate proportions, material choices, and construction logic before any physical crafting begins. This approach not only reduces waste and sampling costs but also ensures that each product



Real-World Examples

- **DataCalculus** emphasizes the dual role of digital visualization in both design refinement and marketing readiness. By simulating leather textures, stitching details, and hardware finishes, their team creates assets that serve internal development and external communication—bridging the gap between



DataCalculus

Real-World Examples

- **Behance**, a global creative platform, showcases portfolios from leather designers who use visual prototyping to present their work professionally. These digital mockups often include 3D models, exploded views, and AR previews, helping designers attract clients, secure funding, or collaborate with manufacturers—especially in bespoke, startup, or

