
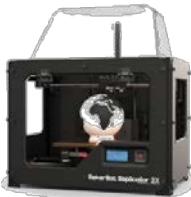






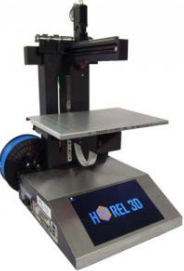



Digital Manufacturing Laboratory – 118 Bonner Hall – Additive Manufacturing / 3D Printing Resources

Image	Item	Material	Build Volume (W/D/H) Layer Thickness / Resolution	File Formats	General Features
Fused Deposition Modeling: FDM Printers					
	MakerBot Replicator (5th Generation)	Plastic: Polylactic Acid (PLA) Colors: Red, Orange, Yellow, Green, Blue, Purple, Black, White, Gray, Natural	Build Volume: 9.9 x 7.8 x 5.9 inches (25.2 x 19.9 x 15.0 cm) Layer Thickness: 100 microns (0.0039 in)	STL, OBJ, THING, MAKERBOT	<ul style="list-style-type: none"> Creates professional-quality, high-resolution prototypes and complex models Software auto-generates supports; minimal support removal and sanding required Choose settings that range from fast draft to finer resolution
	MakerBot Replicator 2X	Plastic: Acrylonitrile-Butadiene-Styrene (ABS) Colors: Red, Orange, Yellow, Green, Blue, Purple, Black, White, Gray, Natural	Build Volume: 9.7 x 6.0 x 6.1 inches (24.6 x 15.2 x 15.5 cm) Layer Thickness: 100 microns (0.0039 in)	STL, OBJ, THING	<ul style="list-style-type: none"> Dual-extruder technology enables two-color printing Creates professional-quality, high-resolution prototypes and complex models Software auto-generates supports; minimal support removal and sanding required Choose settings that range from fast draft to finer resolution
	Stratasys Mojo	Plastic: Acrylonitrile-Butadiene-Styrene+ (ABS+) Colors: Ivory, White, Blue, Fluorescent Yellow, Black, Red, Nectarine, Olive Green, Gray • All colors not available at all times	Build Volume: 5 x 5 x 5 inches (12.7 x 12.7 x 12.7 cm) Layer Thickness: 0.178 mm (0.007 in)	STL	<ul style="list-style-type: none"> High-quality strength and resolution for realistic prototypes or finished parts Support material washes away enabling a smooth, clean finish without sanding or filing
	Stratasys uPrint SE	Plastic: Acrylonitrile-Butadiene-Styrene+ (ABS+) Color: Ivory	Build Volume: 8 x 6 x 6 inches (203 x 152 x 152 mm) Layer Thickness: 0.254 mm (0.010 in)	STL	<ul style="list-style-type: none"> High-quality strength and resolution for realistic prototypes or finished parts Support material washes away enabling a smooth, clean finish without sanding or filing

Stereolithography: SLA Printers					
	<p>FormLabs Form 1+ <i>Laser-based: 405nm violet</i></p>	<p>Liquid Resin: Methacrylate Photopolymer Resin</p> <p>Resin Types: Rigid, flexible, castable, tough; some in a variety of colors</p>	<p>Build Volume: 4.9 × 4.9 × 6.5 inches (125 × 125 × 165 mm)</p> <p>Layer Thickness: 25, 50, 100 microns (0.001, 0.002, 0.004 in)</p> <p>Minimum Feature Size: 300 microns (0.012 in)</p>	<p>STL, OBJ</p>	<ul style="list-style-type: none"> • Smooth, clean finish on any part • Variety of materials enable builds of rigid, flexible, and castable parts • Software auto-generates required supports; minimal post-processing, support removal and sanding required • UV lightbox enhances curing
PolyJet Printers					
	<p>Stratasys Objet30 Prime</p>	<p>Multiple Materials: Rigid (Vero), Rubber-like (Tango), High-temperature, Simulated Polypropylene</p> <ul style="list-style-type: none"> • All materials not available at all times 	<p>Build Volume: 11.57 x 7.55 x 5.85 inches (294 x 192 x 148.6 mm)</p> <p>Layer Thickness: 28 microns (0.0011 in) for Tango materials; 16 microns (0.0006 in) for all other materials</p> <p>Accuracy: 0.1mm (0.0039 in)</p> <p>Resolution: x, y: 600 dpi; z: 1600 dpi</p> <p>Three build modes:</p> <ul style="list-style-type: none"> • Draft (36 micron) • High Speed (28 micron) • High Quality (16 micron) 	<p>STL</p>	<ul style="list-style-type: none"> • Prints precise consumer-product prototypes with smooth surfaces and flexible components • Rubber material enables prototyping of gaskets, plugs and seals • Offers rigid materials in multiple opaque shades as well as clear, for detail visualization and prototypes that include see-through components • Rubberlike materials for soft-touch features and flexible components • Capable of printing specialized materials such as High Temperature, Simulated Polypropylene and even Bio-compatible for medical device prototyping and production parts such as surgical guides
Composite Printers					
	<p>Markforged Mark Two Professional <i>Fused Filament Fabrication (FFF); Composite Filament Fabrication (CFF)</i></p>	<p>Base Material: Nylon (extruded)</p> <p>Composite Infill: Carbon Fiber, Fiberglass, Kevlar®</p>	<p>Build Volume: 12.6 x 5.2 x 6.06 inches (320 x 132 x 154 mm)</p> <p>Layer Thickness: FFF Printing: 100 Microns (0.1mm)</p>	<p>STL</p>	<ul style="list-style-type: none"> • Capable of producing tough, abrasion-resistant, composite-reinforced parts • Carbon fiber material is 20x stiffer than ABS, making it useful for fixtures, jigs, and parts that need the highest strength-to-weight ratio • Kevlar® filament is perfect for parts that need to be stiff and tough • Fiberglass filament provides impressive strength, but at a lower cost than carbon
	<p>Markforged Mark X <i>Fused Filament Fabrication (FFF); Composite Filament Fabrication (CFF)</i></p>	<p>Base Material: Onyx (extruded)</p> <p>Composite Infill: Carbon Fiber, Fiberglass, Kevlar®</p>	<p>Build Volume: 12.9 x 9.8 x 7.8 inches (330 x 250 x 200 mm)</p> <p>Layer Thickness: FFF Printing: 50 Microns (0.05mm)</p>	<p>STL</p>	<ul style="list-style-type: none"> • Prints larger parts with the high-strength materials • Onyx material combines nylon with micro-carbon reinforcement; 1.4 times stronger & stiffer than ABS • Add carbon, Kevlar® and fiberglass filaments for additional strength • High quality finish; high heat tolerance • Laser displacement sensor enables in-process part inspection

Colorjet Printers					
	3D Systems ProJet CJP 260Plus	Material: VisiJet PXL Core VisiJet PXL Clear Binder Colors: Full color (CMY)	Build Volume: 9.3 x 7.3 x 5 inches (236 x 185 x 127 mm) Layer Thickness: 0.004 in (0.1 mm) Resolution: 300 x 450 dpi	STL, 3DS, VRML + more	<ul style="list-style-type: none"> • Builds realistic, high definition, full-color concept models, assemblies and prototypes in full CMY color • Well-suited for concept modeling of communication, sales and marketing models; rapid design iteration; display/art models • Easy post-processing with no supports to remove • Choose from a range of part finishing options to meet your application requirements
Experimental Printers					
	Hyrel Engine 3 <i>Fused Deposition Modeling (FDM)</i>	Multiple Materials: ABS, PLA, as well as other materials (e.g., Play-Doh, nylon and clay)	Build Volume: 8 x 8 x 8 inches (200 x 200 x 200 mm) Positional Resolution: 5 x 5 x 1 micron Positional Accuracy: 50 x 50 x 10 micron Positional Repeatability: 25 x 25 x 5 micron Print tolerance: 0.2 mm	STL	<ul style="list-style-type: none"> • Built-in computer and large touchscreen • Ideal for experimentation with materials • Heated platform for ABS printing
3D Scanner					
	NextEngine 3D Scanner HD		Accuracy 0.005 inch accuracy	Exports to: OBJ, STL, VRML + more	General Features <ul style="list-style-type: none"> • Captures fine detail to 100 micron precision • Provides higher point throughput and much better data fidelity