

3D PRINTING OVERVIEW

Manufacturing Technologies

IN THIS LESSON

We'll review four manufacturing technologies.



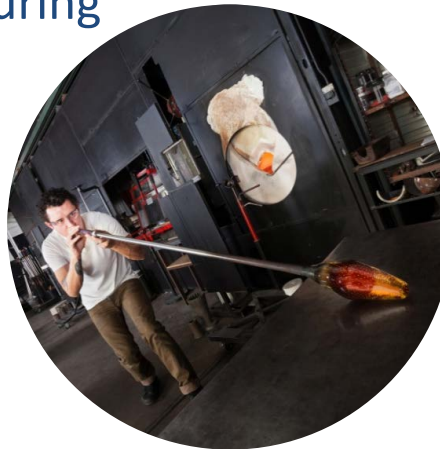
Subtractive manufacturing



Additive manufacturing



Cutting



Forming

CUTTING MANUFACTURING

DEFINITION

A process of making products from varying materials using cutting tools such as laser cutters, vinyl cutters, razors and water jets.

USES

- Modeling 2D products
- Modeling relatively simple products

ADVANTAGES

- Relatively simple to manufacture and operate
- Simple 2D file input
- Quick fabrication
- Can be used with multiple materials
- Low material waste

EXAMPLES



LASER CUTTING



SUBTRACTIVE MANUFACTURING

DEFINITION

A process of making products by removing material from a solid object

USES

- Creating 3D models and tooling
- Cutting “2D elements” in stronger or thicker materials which require a stronger machine

ADVANTAGES

- Traditional, well-known method
- Long history of use
- Relatively simple to manufacture
- Milling bits are relatively low-cost
- Can be used to model strong/thick materials

EXAMPLES



DRILLING



FORMING MANUFACTURING

DEFINITION

A material deformation process that reshapes a work piece without reducing or adding material

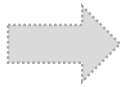
USES

- Special materials

ADVANTAGES

- Traditional, well-known method
- Long history of use
- Reducing storage space

EXAMPLES



GLASS BLOWING



ADDITIVE MANUFACTURING

DEFINITION

A process for making 3D products by primarily adding material rather than removing it. It has become synonymous with 3D printing.

USES

- Prototyping and tooling
- Complex designs
- Modeling that requires interlocking parts

ADVANTAGES

- Design freedom
- Closed systems
- Quick production
- Less waste
- Low-cost manufacturing
- Multiple materials (PolyJet)
- Real thermoplastics (FDM)

EXAMPLES



3D PRINTING



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Thank you.