

SUMMER CAMP 2026 / CURRICULUM 1 OF 5

3D Design

- Summer Camp 2026 3D Design Curriculum

Core Skills Students Will Learn

- Engineering mindset and design thinking
- 3D modeling using TinkerCAD
- Creative ideation and prototyping
- Understanding geometric concepts (planes, vertices, edges, etc.)
- Requirements and constraints in design
- Spatial reasoning and digital fabrication fundamentals
- Introduction to 3D printing technologies and file formats (STL, OBJ)
- Collaboration, feedback, and iterative improvement
- Communicating design intent through storytelling and visual presentation
- Applying design to real-world problems through empathy

Day 1 | Introduction to 3D Design & the Engineering Process

- Icebreakers, expectations, and camp overview
- Introduction to the Engineering Design Process
- Hands-on with TinkerCAD: creating custom nameplates
- Learn to navigate 3D space, workplane, and shape tools
- Take-home: student creates and exports their first 3D model

Day 2 | Solving Problems Through Design

- Review goals, requirements vs. constraints
- Sketching ideas and planning dimensions
- Deep dive into shape manipulation and design strategies
- Finalize and prep nameplate design for 3D printing
- Take-home: design worksheet on helping a family member solve a real-world problem

Day 3 | Engineering for Others: Design with Empathy

- Define user needs: “Design something for a relative”
- Brainstorm and sketch personalized solutions
- Begin digital modeling of their object in TinkerCAD
- Learn about file types (STL, OBJ, MTL) and export options
- Take-home: refine second project and prepare for presentation

Day 4 | From Concept to Reality: Prototyping and Printing

- How 3D printing works (materials, printers, additive process)
- Compare Bedslinger vs. CoreXY printers (pros and cons)
- Practice revising designs for usability and printability
- Finalize object design and prep for print
- Take-home: reflection on design process and peer feedback

Day 5 | Presenting Like a Designer

- Storytelling in design: Who are you helping and why?
- Create and rehearse short presentations
- Showcase: students present their designs to the class
- Celebrate learning with a mini gallery of printed models
- Take-home: printed object and a copy of their design story

What Parents Can Expect

- By the end of five days, students will have:
- (1) Gained hands-on experience with 3D modeling tools
- (2) Completed two custom design projects, including one designed for someone else
- (3) Learned the engineering process through real-world application
- (4) Presented their design ideas with confidence and purpose
- (5) Taken home a printed 3D object they designed from scratch