



## LESSON GUIDE

# Camera Accessories

### DESIGN PARTS THAT HELP YOU USE YOUR CAMERA

In this challenge we want you to design gadgets that can help you take photos. These can be added to conventional cameras, cellphones and action cameras.

### RULES

- The gadgets can be printed as multiple parts that need assembly.
- Non 3D printed parts can be used (screws, nuts, leashes, etc.) but they should only be additions to the main printed part.

### GUIDING DESIGN QUESTIONS

- How can you personalize your camera and improve the user experience?
  - Add protection from mechanical damage and moisture
  - Make it easier to hold steady for better shots
- What aspects can you modify? What attachments would enable self-shots and action shots?
  - Ergonomics for easier handling and personalization
  - Customized appearance
- How can the 3D printing technology allow you to create custom components that suit your needs and preferences?

### TIPS FOR DESIGNING 3D PRINTED PARTS

- The minimal wall thickness that can be reliably printed is 0.6 mm. For load bearing parts, wall thickness should be over 1.5 mm and column diameter over 2.5 mm.
- When designing moving parts that are printed as one piece, leave a clearance of ~0.1 - 0.3 mm (PolyJet) or ~0.5 mm (FDM) between parts. When designing parts that are assembled after printing, leave ~0.1 mm clearance for both systems.
- Consider the material you use in your printing. For example, you can use:
  - ABS-M30 or Digital ABS for higher mechanical properties in load bearing parts.
  - Rubber-like materials for soft parts, protection, vibration absorption or as a soft-feel coating.
  - Color materials for a customized appearance.
- Print prototypes of your design, test them and improve accordingly.

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