



# Functional Design for 3D Printing: Designing 3D printed things for everyday use - an engineering handbook

*Mr Clifford T Smyth*

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# Functional Design for 3D Printing: Designing 3D printed things for everyday use - an engineering handbook

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## **Functional Design for 3D Printing: Designing 3D printed things for everyday use - an engineering handbook** Mr Clifford T Smyth

**3D Printing** is changing the way we think about design, distribution, and manufacturing. By bringing the factory to the desktop, this technology opens the door to a multitude of new opportunities, and challenges paradigms from the drawing board to the boardroom.

Designing usable products for 3D printing poses some unique challenges, and blends the roles of designer and engineer. In *Functional Design for 3D Printing*, the author explains and instructs how to leverage the strengths and minimize the weaknesses of the 3D printing process.

From material selection to design details that will tolerate the design-to-printing process, this book gives the reader the tools to transform their designs into durable, useful products that print reliably on a variety of machines.

*Functional Design for 3D Printing* will help the reader to:

- Minimize printing time, material use, and weight
- Minimize the chance of print failure, on a variety of machines and software
- Make interlocking / snap fit joints
- Maximize strength for maximum utility
- Make objects that flex without breaking
- Reduce stress concentrations for maximum durability
- Solve bed adhesion issues in your design
- Use the correct structural design paradigm, including mixed paradigms for maximum utility
- How and when to use support; when it is worth it to design support features into your model
- Turn your design ideas into practical designs that print efficiently and assemble into a durable, functional object.
- And many more practical details on the design process, including appendices on printing very thin, flexible structures, printer calibrations, and more.

If you are an experienced designer, *Functional Design for 3D Printing* will help you to incorporate design practices that open up the possibilities for functional, printable objects well beyond what is possible with simple model-to-printing work-flows.

If you are a novice designer, *Functional Design for 3D Printing* will be a useful supplement and reference, giving you the technical framework of functional design, helping you to progress from neophyte to high proficiency with a minimum of trial and error.

*Functional Design for 3D Printing* focuses on the intersection of design, printing, and utility, helping the reader to create high utility objects within 3D design and printing workflows, truly delivering the full potential of the "desktop factory".

**129 Pages, 40 Illustrations**

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