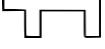
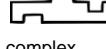
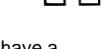
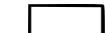
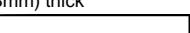
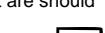


Design for Additive Manufacturing

A quick method for reducing the number of printing and prototyping failures, by Joran Booth

Instructions: Mark one for each category for the part you plan to print. Check daggers and stars first, then scores

Mark One	Complexity	Mark One	Functionality	Mark One	Material Removal	Mark One	Unsupported Features	Sum Across Rows	Totals
<input checked="" type="radio"/>	The part is the same shape as common stock materials, or is completely 2D 	<input checked="" type="radio"/>	Mating surfaces are bearing surfaces, or are expected to endure for 1000+ of cycles 	<input checked="" type="radio"/>	The part is smaller than or the same size as the required support structure 	<input checked="" type="radio"/>	There are long, unsupported features 	$x1 =$	
<input checked="" type="radio"/>	The part is mostly 2D and can be made in a mill or lathe without repositioning it in the clamp 	<input checked="" type="radio"/>	Mating surfaces move significantly, experience large forces, or must endure 100-1000 cycles. 	<input checked="" type="radio"/>	There are small gaps that will require support structures 	<input checked="" type="radio"/>	There are short, unsupported features 	$x2 =$	
<input checked="" type="radio"/>	The part can be made in a mill or lathe, but only after repositioning it in the clamp at least once 	<input checked="" type="radio"/>	Mating surfaces move somewhat, experience moderate forces, or are expected to last 10-100 cycles 	<input checked="" type="radio"/>	Internal cavities, channels, or holes do not have openings for removing materials 	<input checked="" type="radio"/>	Overhang features have a sloped support 	$x3 =$	
<input checked="" type="radio"/>	The part curvature is complex (splines or arcs) for a machining operation such as a mill or lathe 	<input checked="" type="radio"/>	Mating surfaces will move minimally, experience low forces, or are intended to endure 2-10 cycles 	<input checked="" type="radio"/>	Material can be easily removed from internal cavities, channels, or holes 	<input checked="" type="radio"/>	Overhanging features have a minimum of 45deg support 	$x4 =$	
<input checked="" type="radio"/>	There are interior features or surface curvature is too complex to be machined 	<input checked="" type="radio"/>	Surfaces are purely non-functional or experience virtually no cycles 	<input checked="" type="radio"/>	There are no internal cavities, channels, or holes 			$x5 =$	

Mark One	Thin Features	Mark One	Stress Concentration	Mark One	Tolerances	Mark One	Geometric Exactness	+
<input checked="" type="radio"/>	Some walls are less than 1/16" (1.5mm) thick 	<input checked="" type="radio"/>	Interior corners have no chamfer, fillet, or rib 	<input checked="" type="radio"/>	Hole or length dimensions are nominal 	<input checked="" type="radio"/>	The part has large, flat surfaces or has a form that is important to be exact 	$x1 =$
<input checked="" type="radio"/>	Walls are between 1/16" (1.5mm) and 1/8" (3mm) thick 	<input checked="" type="radio"/>	Interior corners have chamfers, fillets, and/or ribs 	<input checked="" type="radio"/>	Hole or length tolerances are adjusted for shrinkage or fit 	<input checked="" type="radio"/>	The part has medium-sized, flat surfaces, or forms that are should be close to exact 	$x3 =$
<input checked="" type="radio"/>	Walls are more than 1/8" (3mm) thick 	<input checked="" type="radio"/>	Interior corners have generous chamfers, fillets, and/or ribs 	<input checked="" type="radio"/>	Hole and length tolerances are considered or are not important 	<input checked="" type="radio"/>	The part has small or no flat surfaces, or forms that need to be exact 	$x5 =$

R E I D
Research in Engineering and Interdisciplinary Design



C DESIGN LAB

Starred Ratings
* Consider a different manufacturing process
† Strongly consider a different manufacturing process

Total Score
8-15 Needs redesign
16-24 Consider redesign
25-32 Moderate likelihood of success
33-40 Higher likelihood of success

Overall Total



Citation: The Design for Additive Manufacturing Worksheet, by Joran W. Booth, 2015. This work is licensed under the Creative Commons Attribution NonDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nd/4.0/>.