

2nd DFMA - Power Transmission Device								
	• You may assume a labour rate of:							
				\$110.00	CAD/hour			
	• For 3D printed parts you may assume a material cost of:							
				\$15.00	CAD/cubic inch			
	and a <b>manufacturing</b> labour cost of:							
				15.00	minutes/build plate			
	• For wood laser cut parts you may assume a material cost of							
			3mm thick	\$6.00	CAD/sheet			
			6mm thick	\$9.00	CAD/sheet			
	• For acrylic laser cut parts you may assume a cost of							
			3mm thick	\$9.00	CAD/sheet			
			6mm thick	\$18.00	CAD/sheet			
	• For any laser cut part you may assume a <b>manufacturing</b> labour cost of:							
				15.00	minutes/sheet			
Overall budget per device				Assembly Index	* calculated per lecture slides			
					* also called design efficiency			
Purchased Parts	\$2.80		13.6%					
Material	\$695.86			Assembly Index = (Total Theoretical Part Count)*3/(Total Assm Time)				
Labour	\$200.60		Total Theoretical Part Count		12			
Total	\$899.26		Total Assm Time		265			
Purchased Parts								
Part Name	Part Cost (CAD/per)	Number	Total Part Cost	Theoretical Part Count	Assembly Time per part (s)	Total Assembly Time (s)	Assembly Labour Cost	
Large nut	\$0.12	4	\$0.48	0	7	28	\$0.86	
Large Washer	\$0.08	4	\$0.32	0	7	28	\$0.86	
Rod	\$1.00	2	\$2.00	0	7	14	\$0.43	
Small Bolt	\$0.08	0	\$0.00	0	10	0	\$0.00	
Small Nut	\$0.04	0	\$0.00	0	10	0	\$0.00	
Small Washer	\$0.08	0	\$0.00	0	10	0	\$0.00	
Slider	\$2.00	0	\$0.00	4	10	0	\$0.00	
Eye bolt	\$0.75	0	\$0.00	0	15	0	\$0.00	
Eye bolt nut	\$0.40	0	\$0.00	0	15	0	\$0.00	
Subtotal			\$2.80	4	91	70	\$2.14	
Manufactured Parts								
Part Name	Material Cost (CAD/per)	Number	Total part material cost	Manufacturing Time (s)	Theoretical Part Count	Assembly Time per part (s)	Total Assembly Time (s)	Total Labour Cost
Handle	\$53.18	1	\$53.18	900	1	30	30	\$28.42
Piston Connector	\$4.59	1	\$4.59	900	1	30	30	\$28.42
Main Box	\$329.34	1	\$329.34	900	1	0	0	\$27.50
Crankshaft	\$63.72	1	\$63.72	900	1	30	30	\$28.42
Combo Gear (12	\$79.31	3	\$237.93	900	3	30	90	\$30.25
Body Cap	\$0.90	1	\$0.90	900	0	5	5	\$27.65
Axle Connection	\$6.21	1	\$6.21	900	1	10	10	\$27.81
Subtotal			\$695.86	6,300	8	135	195	\$198.46
Handle Calculation - 3D Printed Part								
Part volume	58097.969	mm^3						
Part volume	3.545355593	cubic inches						
Material Cost	\$53.18	CAD/part						
Print Time	2580	sec/part						
Piston Connector Calculation - 3D Printed Part								
Part volume	5014.674	mm^3						
Part volume	0.306014183	cubic inches						
Material Cost	\$4.59	CAD/part						
Print Time	2580	sec/part						
Main Box Calculation - 3D Printed Part								
Part volume	359789.388	mm^3						
Part volume	21.95569554	cubic inches						
Material Cost	\$329.34	CAD/part						
Print Time	2580	sec/part						
Crankshaft Calculation - 3D Printed Part								
Part volume	69607.117	mm^3						

Part volume	4.247686895	cubic inches						
Material Cost	\$63.72	CAD/part						
Print Time	2580	sec/part						
<i>Combo Gear Calculation (x3) - 3D Printed Part</i>								
Part volume	86645.664	mm^3						
Part volume	5.287442827	cubic inches						
Material Cost	\$79.31	CAD/part						
Print Time	2580	sec/part						
<i>Axle Connection Gear Calculation - 3D Printed Part</i>								
Part volume	6780.929	mm^3						
Part volume	0.413797676	cubic inches						
Material Cost	\$6.21	CAD/part						
Print Time	2580	sec/part						
<i>Body Cap Calculation - Laser Cut Part</i>								
Parts/sheet	10							
Material Cost	\$0.90	cubic inches						
Manufacturing Tir	90	sec/part						