Redesign a Protective Case Design Brief

Client	Earbud manufacturer
Target Consumer	Earbud customer
Designer(s)	Ryan Curley, Jeremiah Brown
Problem Statement	**What is the problem?** The current design of the earbud protective case is susceptible to damage to the 3D-printed hinge. **Who has the problem?** Earbud (or other device) customers. **Where is the problem happening?** All markets across the world report similar issues with the hinge. **When is the problem happening?** After repeated opening and closing of the case. **Why is the problem important?** The problem has impacted customer satisfaction resulting in damage to the brand.
Design Statement	We will fix our prior design flaws and errors by creating ventilation holes and adding new criteria to our design standards.Once we fix these mistakes, we will continue to improve by creating a smoother functioning hinge and case lock.
Criteria	1. The new case must be composed of three components: a top, a bottom, and a metal pin (specified by teacher). 2. The design must allow easy insertion of the ear buds into the case such that it requires an average user seven seconds or less to secure the ear buds in the case. 3. The case must securely store and protect the earbuds from damage and not break or open when carried in a pants pocket or carried loosely in a purse or bag. 4. The design will include vent holes to allow air circulation into the case but not allow any part of the earbud(s) to protrude through the hole(s). 5. The design should be noticeably different (visually) than the existing protective case and increase the aesthetic appeal of the product. 6. *(The case must meet childproof standards 1 : designed to prevent tampering or opening by **children**)*
Constraints	1. A design must be submitted for critical review by the due date. 2. A 3D printed prototype must be submitted by the due date.. 3. Due to limitations in production, • The maximum volume of prototyping material is 5 cubic inches. • The maximum print time is 2 hours

Deliverables	Phase I – Proof of Concept Only
	• Initial conceptual sketches – at least three
	• An accurate assembly model of the case
	• A set of working drawings to include:
	  ○ *An annotated Multiview drawing for each component of the preliminary redesign **including tolerances** for all dimensions*
	  ○ An annotated assembly drawing of the design
	• A 3D-printed prototype of the design
	• Documentation of total material volume and print time for prototype
	• Proof of Concept Statement
	• Project Reflection

Project Grading Criteria:

Project (100 pts):

	Yes	Kind of…	No
1. Are ***all*** established project criteria met?	20	10	0
2. Are ***all*** established project constraints met?	20	10	0
3. Are ***all*** deliverables submitted by the deadline?	20	10	0
4. Is the product design appropriate? – Will the target client(s), consumer(s), and/or user(s) approve? *(Is it creative/original…?)*	20	10	0
5. Is the presentation/project completed with the utmost attention paid to overall organization, understanding and professionalism/craftsmanship?	20	10	0

Total =____/100%

Final Score = Advanced, Proficient, Average, Needs Improvement, or Incomplete??? Why?

Justify your teams final score here:

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Presentation (100 pts):

	Advanced	Proficient	Average	Basic	Incomplete
1. Define the Problem a. Completed Design Brief with added design statement and criteria	10	9	8	6.5	0
2. Generate Concepts a. Concept sketches (three minimum) b. Justification for solution path	10	9	8	6.5	0
3. Develop Solution a. Annotated concept sketch with tolerances b. 3D solid models of two components c. Assembly drawings d. Complete set of working drawings	30	25	20	10	0
4. Construct and Test a. 3D printed or alternate physical prototype b. Proof that prototype works...	30	25	20	10	0
5. Evaluate Solution a. Proof of concept statement	20	18	16	13	0
6. Completed Team Project Reflection Questions & Graded Project Rubric w/ Justification	10	9	8	6.5	0

Total =____/100%

Final Score = Advanced, Proficient, Average, Needs Improvement, or Incomplete??? Why?

Justify your teams final score here:

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Project Team Reflection:

As a team, reflect and answer the following prompts:

1. *Review the goals you recorded in Step 2 above. Did you achieve your goals? Why or why not?*
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2. *Compare this design experience to Project 1.3.7. Was this design process more efficient? Support your assessment with examples. What did you learn in this design experience that can help you improve your design efficiency in the future?*
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3. *A design process is meant to be iterative (Links to an external site.). Explain how you used iteration to improve your design of a protective container.*
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