

ACTE: Individual/Group Hardware Modification Rubric

- DIRECTIONS**
- 1. Ask the student/group for the **printed portfolio**. Digital or electronic portfolios are not accepted. Allow no more than 5 minutes for project setup and score the printed portfolio during setup.
 - 2. Confirm that the hardware modification, design work, code, documentation, and production assets are student-created. **AI-generated designs, code, documentation, or production assets are prohibited.** If suspected or disclosed, pause scoring and refer the entry to ACTE staff.
 - 3. Allow no more than 10 minutes for the project presentation and demonstration. The student may choose which portion of a larger project to show.
 - 4. Judges may ask questions for no more than 5 minutes and are not limited to the topics listed in the rubric.
 - 5. Enter a score for every criterion. Add the /30 portfolio score and /70 project/presentation score for the /100 final score, then initial page 2.

PRINTED PORTFOLIO CHECKLIST			Points
Online Orientation Certificate	0 Certificate is missing.	10 Certificate is printed and placed as page 1 of the portfolio.	
Printed Portfolio	0 No printed portfolio is submitted, or only a digital/electronic portfolio is provided.	10 A complete printed portfolio is submitted at judging. Digital portfolios are not accepted.	
Required Portfolio Sections	0 Required printed portfolio sections are not provided.	10 - Printed portfolio includes these 9 sections: 1. Online Orientation Certificate (first page) 2. Project identification page: student name(s), school, category, level, and region 3. Table of contents 4. Project narrative: purpose, learning, and benefit 5. Software and hardware used 6. Design brief, before-and-after diagrams/photos, schematics, parts list, safety plan, build plan, or other planning evidence 7. Build photographs, selected code/configuration excerpts, testing results, troubleshooting notes, and revision log 8. Works cited/bibliography and asset/source credits 9. Signed statement that the hardware modification and included code, documentation, and production assets are student-created and contain no AI-generated content or assets	
Judges Printed Portfolio Checklist Score			/30

This section is valued at 30 points total.

HARDWARE MODIFICATION PROJECT & ORAL PRESENTATION RUBRIC

Select the score range that best matches the demonstrated level. Enter one numeric score from 0-10 for each criterion.

PROJECT					Points
Purpose, Need & Modification Plan					
0 No identifiable purpose, need, or modification plan.	1-3 Purpose is unclear; the proposed modification and intended benefit are difficult to identify.	4-6 A basic need and plan are evident, but requirements, constraints, or expected outcomes are incomplete.	7-9 Clear, purposeful modification plan addresses a defined need with logical requirements and outcomes.	10 Compelling, well-researched plan demonstrates exceptional purpose, feasibility, and potential benefit.	
PROJECT					Points
Construction, Materials & Safety					
0 Construction cannot be evaluated or presents an immediate safety concern.	1-3 Materials, assembly, wiring, or tool use are inappropriate, unreliable, or unsafe.	4-6 Appropriate materials and methods are used, but construction quality or safety practices are inconsistent.	7-9 Strong construction, suitable materials, organized workmanship, and safe practices support reliable use.	10 Professional-quality build demonstrates exceptional material selection, workmanship, durability, and safety.	
PROJECT					Points
Functionality, Testing & Reliability					
0 Modification does not function or cannot be tested.	1-3 Major failures or incomplete testing prevent reliable operation.	4-6 Core functions work, but performance, testing evidence, or reliability is uneven.	7-9 Modification functions reliably with documented testing and only minor performance issues.	10 Fully functional, thoroughly tested modification performs consistently and exceeds its intended requirements.	
PROJECT					Points
Technical Innovation & Improvement					
0 No meaningful modification or improvement is demonstrated.	1-3 Changes are minimal, poorly matched to the need, or reduce usability/performance.	4-6 Modification provides a basic improvement, but technical choices or refinement are limited.	7-9 Creative technical choices produce a clear, useful improvement in performance, access, efficiency, or usability.	10 Highly innovative modification delivers exceptional improvement through refined engineering and technical decisions.	
PROJECT					Points
Originality, Purpose & Student Authorship					
0 Purpose or student authorship cannot be established.	1-3 Work shows limited original decision-making; sources, code, or build process are unclear.	4-6 Purpose and student contribution are evident, though technical choices or documentation are basic.	7-9 Original, purposeful work with clear student ownership and well-supported build evidence.	10 Distinctive technical vision, meaningful purpose, and convincing evidence of independent student authorship.	
PRESENTATION					Points
Explanation of Process & Professional Delivery					
0 Does not explain or demonstrate the modification process.	1-3 Explanation is difficult to follow; limited preparation or understanding of the workflow.	4-6 Explains major steps and tools, but detail, organization, or delivery is inconsistent.	7-9 Clearly explains planning, construction, testing, troubleshooting, and revisions professionally.	10 Confident, concise demonstration shows command of the complete hardware-modification workflow.	
QUESTIONS					Points
Knowledge, Troubleshooting & Responses					
0 Does not answer judges' questions.	1-3 Answers are incomplete or show little understanding of components, tools, safety, or decisions.	4-6 Answers most questions and describes basic testing or troubleshooting.	7-9 Provides specific, accurate responses about components, construction, testing, safety, and revisions.	10 Insightful responses demonstrate deep technical understanding, reflection, and equal group contribution.	

AI-GENERATED HARDWARE CONTENT PROHIBITED: Entries may not contain generative-AI-created designs, schematics, code, documentation, or other production assets. Judges should not independently penalize suspected use; pause scoring and refer the entry to ACTE staff for review.

Judges Printed Portfolio Checklist Score	/30
Hardware Modification Project & Oral Presentation Score	/70
Total Project Score	/100
Ranking (ACTE Staff Only)	

Judges Initials: _____