STEAM TCAC 2026

Prompts & Criteria

Criteria

Showcases

Analysis & Presentation (0-5)	The report is properly organized and well structured with the problem, methodology and solution outlined clearly. Diagrams, descriptions and explanations are in-depth and logically arranged to effectively communicate ideas. The presentation is engaging throughout and clearly communicates ideas. The presenter(s) is/are well-paced (presentation is within the given 10 minute time limit) and respond thoughtfully to questions.
Model (0-7)	The model demonstrates precision and attention to detail, effectively applying concepts and ideas to communicate a feasible solution to the problem. Functional technological components demonstrate the solution's practicality and scalability. The model is cohesive and logically organized to represent the solution cohesively. The model adheres to the given size limit of 50 x 50 x 50 cm.
Technology (0-7)	The project shows innovative integration of technology to solve the problem. Functional components are embedded in the design, emphasizing real-world feasibility, responsiveness, and interactivity. Future technologies are considered to make the solution adaptable to new environments and changes.
Scientific Application & Innovation (0-6)	Relevant scientific concepts are thoroughly explained and correctly utilized. The solution is efficient and well-researched, with thorough analysis of scientific principles. The project is original and creatively builds on past ideas through the use of technology. The design considers multiple factors related to the problem and anticipates future needs and developments.
Sustainability (0-5)	Project planning includes topics such as resource efficiency, long-term viability, sustainable use, etc. The model is also constructed sustainably through the use of recycled materials and thoughtful practices. Functional technological components minimize ecological footprint and promote sustainability.

Criteria

Writtens

Report (0-5)	The report includes components such as a clearly defined problem, relevant background research, the proposed solution, planning and development process. It uses visuals to support explanations and presents research and design thinking in a clear, organized format. The structure helps communicate the solution's purpose and feasibility effectively, ensuring all factors are discussed in depth.
Prototyping Plan (0–7)	Planning for the prototype uses feasible materials and available technology. The team has thought through potential challenges and addressed them through annotated diagrams and 3D sketches. The proposed design reflects careful planning and shows a clear path toward building a functional and scalable solution.
Technology (0-7)	The project shows innovative integration of technology to solve the problem. Functional components are embedded in the design, emphasizing real-world feasibility, responsiveness, and interactivity. Future technologies are considered to make the solution adaptable to new environments and changes.
Scientific Application & Innovation (0-6)	Relevant scientific concepts are thoroughly explained and correctly utilized. The solution is efficient and well-researched, with thorough analysis of scientific principles. The project is original and creatively builds on past ideas through the use of technology. The design considers multiple factors related to the problem and anticipates future needs and developments.
Sustainability (0-5)	Project planning includes topics such as resource efficiency, long-term viability, sustainable use, etc. The model is also constructed sustainably through the use of recycled materials and thoughtful practices. Functional technological components minimize ecological footprint and promote sustainability.

Guidelines

Showcases

The analysis is a maximum of 5 pages, has 1 inch margins, in Times New Roman size 12, and has 1.15 spacing. Models and any physical visual aids need to be maximum 50x50x50 cm including any physical visual aids. Participants are also responsible for providing any digital visual aids.

Writtens

The report does not need to be scientific in nature. It must have a maximum of 20 pages, not including the appendix, bibliography (APA 7), and title. There must be 1 inch margins on all sides , a font of Times New Roman size 12, and a 1.15 spacing.

Engineering

Prompt

As cities grow and land becomes scarce, there's often no room between skyscrapers to build ground-supported infrastructure for secondary routes or local connectors. Transportation systems must directly connect infrastructure with minimal reliance on the ground. What kind of in-sky transportation system can adapt dynamically by being modular while weaving through urban space? How can this system detect and respond to surrounding factors such as traffic, infrastructure stress, and weather conditions? What structural requirements must be met for the system to remain lightweight, cost-effective, and compatible with sustainable mobility (electric vehicles, public transit, cycling, etc.)?

Life Sciences

Prompt

With more than 43 million blind individuals and another 295 million people with moderate-to-severe visual impairment around the globe, the need for assistive technology is widespread. Current assistive technology like white canes and simple audio cues lack real-time spatial perception, putting the user in danger within changing environments. What sort of wearable navigation system can be designed to construct a 3D "sound map" of space to enhance independent spatial awareness? How can the device be lightweight, discreet, and affordable? How can this technology be implemented for different levels of vision loss?

Astronomy

Prompt

With human civilization moving towards interstellar expansion, studying exoplanetary systems has become essential. Colonization of exoplanetary systems can ensure long-term species survival in the case of planetary catastrophes like climatic change, extraterrestrial destruction, exhaustion of resources, etc. However, current detection techniques such as transit photometry and radial velocity favor large, close-orbiting planets like "hot Jupiters" and miss smaller, Earth-type planets which rest in habitable temperate zones. What other data must be measured to better detect Earth-like exoplanets? How can exoplanetary systems be classified to better prioritize future attempts at colonization?

Comp. Sci.

Prompt

Over 95% of home security camera video surveillance is never viewed, and the majority of footage only wastes storage and energy. With the surge in home surveillance systems, there has been a dramatic increase in energy usage, carbon emissions, and demand for data centers. How can stored video be compressed according to principles of human perceptual science to reduce storage needs without compromising perceived quality? How can "useful" footage be automatically identified using sensor data from the camera system or nearby devices? What algorithms and edge-processing techniques make this system scalable, privacy-conscious, and precise?