

TEAMS Essay Challenge: Weather-Responsive Design and Construction

The Caribbean Islands are very susceptible to the effects of climate change, making the dwellings subject to extreme and frequent weather events. Building design must offer greater structural sustainability and protection for occupants to ensure their safety.

Your team has been selected as the project engineers with the ambitious goal of designing a new two-story hotel at a beach resort that will withstand the greatest number of severe weather events or natural disasters. Assuming evacuation is impossible, your criteria must include two critical elements - building sustainability and occupant safety.

As the project engineers, your team must address specific aspects of your solution from the perspective of a structural engineer plus **two** of the following engineering disciplines: civil engineering, electrical engineering, environmental engineering, geotechnical engineering, and mechanical engineering.

Your team will prepare a summative report on the proposal.

The summative report should:

1. Include the location of the Caribbean Island and the specific location of the new hotel as identified on a map included in the appendix.
2. Identify the types of severe weather events or natural disasters for which you are designing. Be sure the events you choose have either occurred or may occur in the near future as a result of climate change for that particular region.
3. Describe how your structure is engineered to provide structural integrity during severe weather events or natural disasters.
4. Address specific aspects of your solution from the perspective of **two** of the following engineering disciplines:
 - a. A civil engineer, describing how the site plan supports the structure inclusive of site layout, grading, drainage, and utilities.
 - b. An electrical engineer, describing a system that maintains support for the electrical systems, lighting and communications, regardless of the weather conditions.
 - c. An environmental engineer, ensuring that the proposed design adheres to the island's regulations and sustainability practices, minimizing the building's impact.
 - d. A geotechnical engineer, analyzing the ground conditions to ensure the foundation is properly designed to support the building.
 - e. A mechanical engineer, describing mechanical mechanisms that must be incorporated into the structure or surrounding area.

5. The conclusion should summarize the strengths of the proposal but should also identify at least one potential structural failure and the conditions under which it would occur.
6. The appendix should include any maps, diagrams, images, and/or mathematical equations in support of the proposal.

Submission Criteria:

The report must include the following five sections:

(1) Title page (2) Abstract (3) Essay (4) Reference (5) Appendix

The abstract must be between 150-250 words

The essay must be no longer than 1,000 words and should incorporate inline citations. / APA Format
The 1,000-word limitation applies only to the essay section. No other sections are included in the word count.

The title page must include the following:

(1) Student Names, (2) School/Group Name, (3) Coach's Name, (4) Participant ID number, (5) Word Count (*Word count is for the body of the essay only.*)

The report must be typed in 12-point Times New Roman font with 1" margins.

The participant ID number must be included in the page header on every page.

Submission Procedure:

Electronic submission of entries through the online portal only. No emailed submissions.

All submissions are due by 11:59 PM EST on January 13, 2025.

- The submission link is available after **January 10, 2025**.
- The submission link provided in the instructions cannot be typed into your internet browser. You must click the link in the document to be directed to the correct site.
 - The submission link is also posted on the TEAMS website under the State Competitions tab.
- The username and password for submission is provided in the essay instructions (different from your coach account log in credentials).

TEAMS Competition Regulations:

Teams may not seek or receive outside help for writing the essay, any designs, necessary math, etc.

Teams may NOT utilize any electronic composition assistance for this prompt inclusive of any AI system or software. Submissions suspected of AI composition or grammar tools may result in a submission deemed ineligible for scoring at the judge's discretion.

All decisions made by the judges are final and cannot be appealed.