

# 2025 BMES DESIGN COMPETITION OFFICIAL TEAM PACKET

PRACTICING ENGINEERING DESIGN  
IN PREPARATION TO CHANGE THE  
WORLD

*Providing a friendly competition space for innovative students to  
create engineering solutions*

Date & Time: Saturday, March 29, 2025, 9:00 am - 4:00 pm

Location: Biomedical Engineering Building (BME) 107 W Dean Keeton St, Austin, TX

Contact Information: [designcomp.texasbmes@gmail.com](mailto:designcomp.texasbmes@gmail.com)

## **OVERVIEW:**

*This Engineering Design Competition is a chance to have fun, build something, and challenge yourself as innovators. It is a low-stakes event to learn and build something. Give it your best effort!*

### **Requirements:**

- 1) You must design a prototype of a device that solves an aspect of the prompt.**
  - a) The device may be comprised of software, hardware, and/or mechanical parts.
  - b) It does not have to be complex! It is better to answer the question and create a well-developed and thought-out solution that answers the given prompt.
  - c) The prototype must be physical - please refrain from designing only a code or app.
  
- 2) You must sign up for a **one-on-one meeting with the prompt committee to go over your chosen solution and presentation.****

  - a) You will sign up for a 30-minute Zoom or in-person meeting
  - b) The earlier you have this meeting, the earlier your team will receive feedback from the committee.
  - c) Anything is better than nothing! We do not expect your solution to be fully fleshed out - we want to see your progress in order to help your idea come to life.

  
- 3) You must present on the Presentation day which is Saturday, March 29, 2025.**
  - a) Teams will present a PowerPoint to the judges.
  - b) Presentation time preferences will be given in the order that teams check in on Competition Day. The entire team must be present in order to check in and choose their presentation time. At this time, slides must be sent to the Competition Chair.

## **PROBLEM STATEMENT:**

### **Key Questions To Ask**

1. Is there a clear objective?
2. Is the objective relevant to the needs of the potential user?
3. Will this solution work? Acceptable to the potential user?  
Economically feasible?
4. Does the prototype have the feasible potential to become an end product?
5. Does the team's solution demonstrate a significant improvement to previous/alternative solutions?
6. Has the solution been tested to see if it will perform under the conditions it will be used under?

## **BACKGROUND:**

As college students navigate their academic and personal lives, they encounter a myriad of challenges that can significantly impact their overall well-being and performance. Among these challenges are medical issues resulting from prolonged hours of study in dorm rooms and libraries, mobility difficulties faced by those with physical limitations, and accessibility barriers that prevent students with disabilities from fully participating in campus activities. These obstacles can lead to both immediate discomfort and long-term health consequences, affecting students' ability to succeed academically and socially. Current solutions for addressing these challenges are often inadequate due to limitations in design, usability, and effectiveness. **Present a device that addresses any of these common issues, enhancing the overall college experience.**

## **APPROACHES TO CONSIDER:**

- Difficulties with posture, mobility, or even access to facilities
- Can range from minor inconveniences to serious concerns for students' well no-being
- Creating assistive devices, ergonomic solutions, or tools that help students manage daily activities more efficiently (especially students who are physically challenged).

## **BUDGET:**

**Refunded Budget Max: \$40** (*This means you will only be refunded \$40.*)  
*You will be required to submit a receipt of your payments in order to receive this refund at the end of the competition.*

**Total/Max Spending: \$70** (*This means that your entire device cannot exceed \$70. This cap ensures fairness for all teams.*)

## **COMPETITION FORMAT:**

- **6-8** minute PowerPoint presentation with 5 minutes of Q & A.
- The prototype must be presented within the time frame.
- Teams are expected to arrive before 9:00 A.M. to make sure we stay on schedule.
- Teams can expect to be led to the presentation room by the Committee when it is their presentation time. Be ready at least 15 minutes prior to your time.
- You will connect your laptop to present on the screen. A committee member will be available to assist you.
- The entire competition will be streamed to the waiting room.
- The attire for the presentation is business casual - business professional. There will be opportunities to network and we want everyone looking and feeling their best!

## **JUDGING CRITERIA:**

- Judges are expected to objectively assign scores to each team.
- Placement will be awarded according to merits in ambition, innovation, implementation, and presentation of your project.
- Please notify the Design Competition Committee if you have any questions.

## **JUDGING RUBRIC:**

<b>Category</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>I. Research Problem:</b> Demonstrates need. Clear criteria for proposed solution. Explanation of Constraints.					
<b>II. Design &amp; Process:</b> Explored alternatives to answer the need. Identifies a solution. Develops a prototype/model.					
<b>III. Execution: Construction and Testing:</b> Prototype demonstrates intended design. Prototype has been tested in multiple conditions. Prototype demonstrates engineering skill and completeness.					
<b>IV. Presentation:</b> Clarity. Contribution and understanding by all members.					
<b>V. Creativity:</b> Project demonstrates significant creativity in the categories above.					
<b>VI. Practicality and Relevance:</b>					

The project is market-relevant, cost-effective, and feasible for mass production, with the potential to make a significant impact.					
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(1=lowest score)

Points will be deducted by the committee for presentations lasting more than 8 minutes.

**RESOURCES:**

- Professors can provide valuable expertise and guidance.
- A wide range of academic databases is available through the [University of Texas Libraries](#) for research purposes.
- Librarians, such as [Hannah Chapman Tripp](#), can assist with finding relevant sources and navigating library resources.
- The [Dell Medical School Oncology Department](#) offers insights into medical research and clinical applications.
- Students can seek assistance from the BMES Prompt Committee by scheduling a one-on-one meeting for guidance and support.
- Conducting interviews and gathering feedback from peers can provide additional perspectives and improve the quality of research and project development.

**TIPS:**

- Take advantage of the wealth of knowledge available on campus by seeking input from professors and experts, particularly those in the Engineering department—they are approachable and willing to help.
- Consider interviewing individuals beyond the university, including members of the general public and fellow peers. Understanding the perspectives of those you aim to design for is invaluable in creating effective solutions.
- Plan ahead, maintain accountability, and develop contingency plans.
- Start with a solid foundation and gradually refine your ideas. Ensuring alignment and communication within your team fosters collaboration and makes your project more structured and approachable.

- Leverage individual strengths while delegating tasks effectively, but remain open to exploring new areas of expertise.
- Finally, **refer to the rubric** throughout your work, as it outlines the criteria by which your project will be evaluated by the judges.