

MESA National Engineering Design Challenge (NEDC)

Overview: This year’s challenge asks students to implement a Human-Centered Design approach to engineer a solution that solves an inequity experienced by an individual or group. Students must use a microcontroller as the key component to their design. They may choose from Arduino Uno, Microbit or Circuit Playground Express.

Students must be in teams of 2 to 4 students.

Besides their Device the student will be scored on 4 Criteria –

1. **Design Brief** - The objective of the Design Brief is to provide a brief, non-technical overview of the entire project. Students must use the provided Design Brief Template (see Appendix).

2. **Technical Presentation and Interview**- The objective of the Technical Presentation and Interview is to provide an overview of the prototype functionality including a technical explanation of the mechanical operations, software operations, and integration of the two. Students will deliver a short presentation, which includes a demonstration of the functionality of the prototype, followed by a question-and-answer session with judges.

3. **Poster and Symposium** - The objective of the Poster is to provide an overview of the project, highlight key points of the design process, discuss relevant testing and data collection, present the resulting prototype, and share recommendations for further development. Students will prepare a printed academic poster, which will be used during a public poster symposium to provide an overview of the project and the prototype.

4. **Prototype Pitch -** The objective of the Prototype Pitch is to convince the audience that the design meets the user’s needs and has value as a product to address an issue of inequity. Students will prepare a creative, engaging presentation to pitch their prototype to an audience, including a group of judges. The presentation should define the problem; should show how they address the theme of *Designing for Equity*; provide a detailed description of the user and their needs; discuss current solutions to the problem and their weaknesses; and provide a demonstration of their prototype highlighting its advantages.

**Scoring Summary**

Overall ranking will be based on the total score, which is derived by adding the scores for each component. Below is a summary of the point values for each component:

**Design Brief 50 points (15%)**

**Poster Symposium 75 points (23%)**

**Technical Presentation & Interview 100 points (31%)**

**Prototype Pitch 100 points (31%)**

**Total 325 points (100%)**