

CIJE-STEAM High School

CIJE INNOVATION DAY  
2024-2025

CENTER FOR  
INITIATIVES  
IN JEWISH  
EDUCATION



### CIJE Innovation Day

We're excited to partner with your school as we kick off what promises to be a productive academic year. We can't wait to see you and your students at CIJE Innovation Day 2025. To foster an environment that is fair, collaborative, and safe for everyone, we ask that all participants adhere to the Rules & Regulations and Code of Conduct included in this packet.

CIJE Innovation Day is more than just a single event; it's a key component of a broader educational experience that blends Project-Based Learning with Engineering and Design Education. Throughout the year, we encourage you to inspire your students to observe the ordinary around them and think critically about what could be improved. This practice is the first step in teaching them to view the world through an engineer's lens.

All students will present their capstone projects in person at a CIJE Innovation Day event. A Innovation Day presentation will focus on the product and be scored live for local category awards. Project Portfolios will be scored separately from the in-person presentations and will be eligible for national awards.

Students who are unable to attend the in-person CIJE Innovation Day events in New York or Florida will have the opportunity to pitch their projects at the Virtual CIJE Innovation Day. Depending on the CIJE Innovation Day event being attended, teachers will be able to select from available formats on how their students will present their projects. Options include:

- 1) A traditional CIJE pitch room where students will present 5-minute pitches before judges and their peers.
- 2) A "science fair" style gallery where students will engage with judges while standing in front of their projects. This option does not entail presenting in front of a group of people and is less formal than the traditional pitch room. A poster board or similar display is required.

### Project Portfolio

Having a portfolio of work is invaluable, as it not only facilitates the learning process during its creation but also serves as a lasting demonstration of students' capabilities that can be easily shared with colleges and potential employers. It is essential for students to develop the ability to effectively communicate their ideas to the public, and one impactful method to achieve this is through an "elevator pitch."

A website can also be an excellent platform for students to showcase their work. We encourage you to guide students in solidifying their projects by creating a "Project Portfolio." This portfolio can include a variety of media forms, such as PowerPoint presentations, websites, pitches, videos, and written reports.

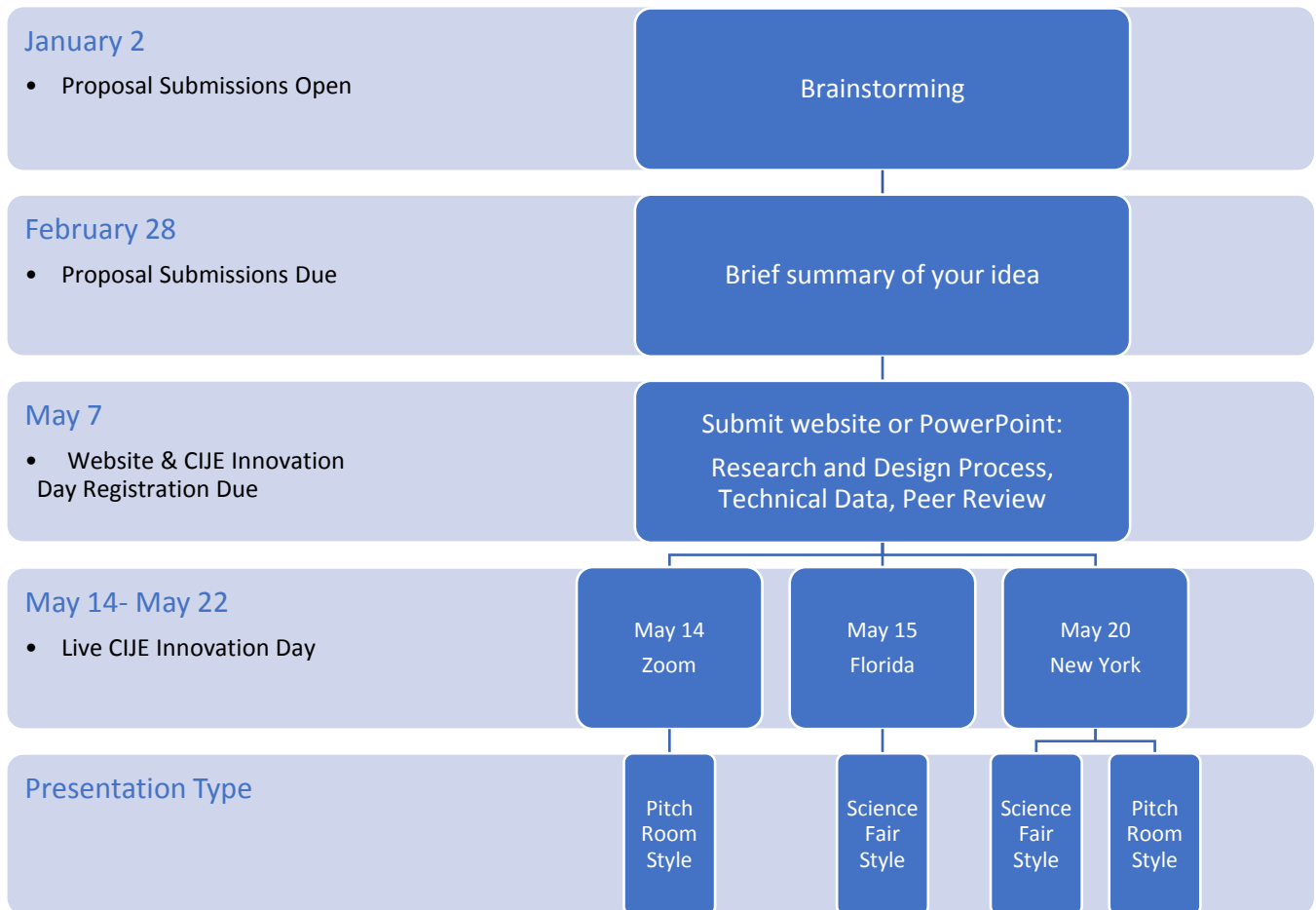
## Capstone Timeline

### Capstone Project Proposals - January 2<sup>nd</sup> to February 28<sup>th</sup>

Each project should submit a capstone project proposal. Proposals consist of team members' names and a brief abstract describing the project idea. Capstone funds (\$75 per project) will be available to the schools once abstracts are submitted. Submission Form: <https://www.theCIJE.org/InnovationDay2025>

### Capstone Submissions and Innovation Day Registration – Due May 7<sup>th</sup>




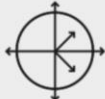



On May 7<sup>th</sup>, the final website/portfolio submissions are due. At this time students will submit their: (1) website URL or portfolio link, (2) preferred project category, and (3) desired presentation format for Innovation Day. Submit at: <https://www.theCIJE.org/InnovationDay2025> Students can continue working on their projects up until the CIJE Innovation Day. While the submission form will remain open past the deadline, projects submitted past this deadline will not be eligible for awards.







### Judging Rubrics

The CIJE rubric is intended as a guide to steer students through their projects. **Closely rooted in design thinking**, it establishes "best practices" and a progression of accomplishment in each category. This valuable methodology is one we are striving to instill in our students. The rubric can serve as a guide for creating student portfolios, as well as a means of grading the students for the year.

## Process Judging Rubric 2024-25

	Subpar	Minimum Expectations	Standard Expectations	Superior Expectations
<b>BACKGROUND &amp; MARKET RESEARCH</b>	<b>0 – 1 pts</b>	<b>2 pts</b>	<b>3 pts</b>	<b>5 pts</b>
 <p>Identify sources and collect information from multiple angles.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Conducts marketing research with at least 1 typical resource (e.g., article, book, website)</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Consults at least 1 expert source (person or organization)</li> <li>Roughly estimates the target market's size through number of people and/or sales revenue</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Demonstrates mastery of subject knowledge</li> <li>Envisions the end user(s)</li> </ul>
<b>EMPATHIZE (USER RESEARCH)</b>	<b>0 – 1 pts</b>	<b>2 pts</b>	<b>3 pts</b>	<b>5 pts</b>
 <p>Inspire new thinking by discovering what people really need.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Presents results from interviewing at least 2 people about their personal needs</li> <li>Considers how users would use/access potential solutions</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Presents data from surveying at least 10 people about their needs</li> <li>Asks interviewees probing questions about personal needs</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Presents data from surveying a total of at least 20 people</li> <li>Conducts direct observation of end users in their natural environment</li> </ul>
<b>DEFINE</b>	<b>0 – 1 pts</b>	<b>2 pts</b>	<b>3 pts</b>	<b>5 pts</b>
 <p>Identify a driving question that inspires others to search for creative solutions.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Presents a purpose for the innovation</li> <li>Defines design goals that an ultimate solution must meet (e.g., design constraints and design criteria)</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Identifies a target user who experiences this problem</li> <li>Used a thesis statement (1 or 2 sentences) identifying a problem, based on the above research</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Includes rich profiles of different types of target users and their specific needs, based on the above research</li> <li>The problem is compelling and contains novel needs</li> </ul>
<b>IDEATE (BRAINSTORM)</b>	<b>0 – 1 pts</b>	<b>2 pts</b>	<b>3 pts</b>	<b>5 pts</b>
 <p>Push past obvious solutions to get to breakthrough ideas.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Diagrams/lists at least 3 potential solutions to the defined problem</li> <li>Explains why they settled on the final approach (e.g., decision matrix) instead of using other technology or sensors to solve this problem</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Explains the proposed solution's competitive advantage(s) versus existing competition</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Notes any brainstorming iterations based on target users' or professional feedback</li> </ul>
<b>ENGINEERING DRAWINGS</b>	<b>0 – 2 pts</b>	<b>6 pts</b>	<b>10 pts</b>	<b>15 pts</b>
 <p>Illustrate engineering details to share knowledge.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Illustrated how input/output components work together as a system (e.g., block diagram)</li> <li>Includes bill of materials for cost of making the prototype (e.g., spreadsheet format)</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Includes at least 2 of the following: electrical schematic, circuit diagram, pseudocode, programming flowchart, CAD model, assembly drawing</li> <li>Drawings had appropriate labels and measurements</li> <li>Includes video demonstrating that prototype works (at least 20 seconds of footage)</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Includes a total of at least 4 of the listed engineering illustrations</li> <li>Describes how the prototype was iterated to improve the design and meet project goals</li> </ul>
<b>TEST &amp; REFLECT</b>	<b>0 – 1 pts</b>	<b>2 pts</b>	<b>4 pts</b>	<b>6 pts</b>
 <p>Use feedback to assess the prototype's feasibility, viability, and desirability.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Considers ways that the prototype could be improved</li> <li>Testing results prove that the prototype meets the defined design goals</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Considers feedback from at least 2 peer or target user reviewers</li> <li>Plans improvements based on feedback and testing results (or justifies why the original design will not be changed)</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Considers feedback from a total of at least 5 peer or target user reviewers</li> </ul>
<b>DIGITAL PORTFOLIO</b>	<b>0 – 1 pts</b>	<b>3 pts</b>	<b>5 pts</b>	<b>7 pts</b>
 <p>Craft a visually engaging digital artifact that informs and inspires the viewer about the solution's validity and highlights the thoughtful capstone process as outlined in the above categories.</p>	<p><i>Addressed topic but did not include all the items listed for Minimum Expectations</i></p>	<ul style="list-style-type: none"> <li>Includes sections outlined in the above categories</li> <li>Has an abstract (250 words or less) summarizing the project scope</li> <li>Features team bio &amp; outline of who was responsible for which tasks</li> <li>Acknowledges any outside resources/people who helped with or inspired the project</li> <li>Identifies how AI was used as a tool to help the project</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Portfolio is visually appealing and well designed with consistent formatting; all the required content can be easily located and read</li> <li>Portfolio clearly emphasizes key points and has a consistent overall message</li> </ul>	<p>...AND</p> <ul style="list-style-type: none"> <li>Portfolio had a consistent branding/theme throughout and features an original logo</li> <li>Includes appealing graphics of data results (e.g., from background research and empathize sections)</li> </ul>

## Product Judging Rubric 2024-25

	Subpar	Minimum Expectations	Standard Expectations	Superior Expectations
<b>INNOVATION</b>	<b>0 – 2 pts</b>	<b>6 pts</b>	<b>10 pts</b>	<b>15 pts</b>
 Develop a unique solution to a compelling problem.	Addressed topic but did not include all the items listed for Minimum Expectations	<ul style="list-style-type: none"> <li>Clearly explains what problem was addressed and why it was addressed</li> <li>Clearly explains a proposed solution for solving this problem</li> </ul>	...AND <ul style="list-style-type: none"> <li>Capstone approaches a novel problem for target users</li> <li>Explains how prototype effectively meets design goals</li> </ul>	...AND <ul style="list-style-type: none"> <li>Capstone demonstrates a creative approach to solving the defined problem</li> <li>Explains how the solution has a unique competitive advantage</li> </ul>
<b>PROTOTYPE</b>	<b>0 – 2 pts</b>	<b>8 pts</b>	<b>16 pts</b>	<b>25 pts</b>
 Build prototypes to demonstrate a solution.	Addressed topic but did not include all the items listed for Minimum Expectations	<ul style="list-style-type: none"> <li>Physical prototype has an unfinished appearance</li> <li>Solves the identified problem and meets target users' needs</li> <li>Prototype works erratically</li> </ul>	...AND <ul style="list-style-type: none"> <li>Prototype has a professional appearance (e.g., no exposed electronics or loose wires)</li> <li>Prototype is durable and can be repeatedly demonstrated</li> </ul>	...AND <ul style="list-style-type: none"> <li>Prototype has an elegant/aesthetic design</li> <li>Solution is feasible, cost-effective, and readily implementable in real life</li> </ul>
<b>ENGINEERING COMPLEXITY</b>	<b>0 – 2 pts</b>	<b>6 pts</b>	<b>10 pts</b>	<b>15 pts</b>
 Utilize the right electronic components and coding to best solve the defined problem and account for various scenarios.	Addressed topic but did not include all the items listed for Minimum Expectations	<ul style="list-style-type: none"> <li>Explains how input/output components work together as a system (e.g., block diagram)</li> <li>Explains choice of electronic components used</li> <li>Explains choice of code used</li> </ul>	...AND <ul style="list-style-type: none"> <li>Capstone is constructed with thoughtful and precise choice of components and code</li> <li>Capstone incorporates multiple components and code which directly solve for various scenarios</li> </ul>	...AND <ul style="list-style-type: none"> <li>Capstone utilizes advanced electronic or coding concepts</li> <li>Capstone has an outstanding synthesis of electronics and code</li> </ul>
<b>PRESENTATION</b>	<b>0 – 1 pts</b>	<b>4 pts</b>	<b>7 pts</b>	<b>10 pts</b>
 Craft an engaging human story to inspire the viewer by highlighting the solution's benefits and features.	Addressed topic but did not include all the items listed for Minimum Expectations	<ul style="list-style-type: none"> <li>Presents pitch within time limit (1-5 minutes long)</li> <li>Presentation clearly features the product's name</li> <li>All team members actively participate in the presentation</li> </ul>	...AND <ul style="list-style-type: none"> <li>Presentation and resources demonstrate strong audio and visual quality</li> <li>Demonstrates a prototype or model solving the problem</li> <li>Outlines next steps in further development of the project</li> </ul>	...AND <ul style="list-style-type: none"> <li>Presentation has a strong and consistent message, convincing viewers that it is worthwhile to develop this idea further</li> <li>Presentation has exceptionally strong energy/wow factor or personal connection</li> <li>Presentation has a highly polished and practiced presentation</li> </ul>

The first round of pre-judging will focus on the capstone **process** rubric, and the second round of in-person judging will focus on the **product** rubric. These rubrics should serve as the map for capstone standards. The judging scorecard and the questions posed to the students by judges will draw from these rubrics.

### Peer Judging

Students will be asked to evaluate projects and presentations in their respective rooms as a method of engagement.

### CIJE Tank

CIJE Tank is a separately run program in which projects compete for the title of most likely to be brought to market. CIJE Tank finalists present before a panel of entrepreneurs for a chance at a provisional patent for their project. A website including a video pitch is recommended for those wishing to be selected, but no additional steps are required to be considered. Up to twenty semi-finalists will be awarded the Entrepreneurial Merit Award based on their submitted Project Portfolios as well as their entrepreneurial potential. CIJE Tank judges select finalists independent from the Innovation Day judging. Finalists are announced September 2025 and deliver their pitches before the panel in Fall 2025. Only students in active CIJE schools may participate.



## Project Categories

As in years past, students will select a specific category to compete in when registering for CIJE Innovation Day. Categories are subject to change based on interest and participation. Categories include:

1. <b>Assistive Technology</b>	Projects that assist people with disabilities or special needs
2. <b>Engineering for Children</b>	Projects designed to help care for children
3. <b>Engineering for Entertainment &amp; the Arts</b>	Projects that provide the user enjoyment such toys, games, music, or visual displays
4. <b>Engineering for Healthcare</b>	Projects that measure, diagnose, prevent, and/or treat health conditions of body or mind
5. <b>Engineering for Jewish Life</b>	Projects that help with the practice of Jewish religion or culture
6. <b>Engineering for Mobility</b>	Projects that help people who have difficulty moving or controlling certain parts of their body
7. <b>Engineering for Older Adults</b>	Projects designed to help people manage challenges due to aging
8. <b>Engineering for Personal Care</b>	Projects that help people with their personal hygiene
9. <b>Engineering for Pets</b>	Projects that help a person would use with a pet
10. <b>Engineering for School</b>	Projects that would be used in a school setting
11. <b>Engineering for Transportation</b>	Projects related to transportation such as for roads, cars, bicycles, airplanes, or boats
12. <b>Engineering for Workplace Solutions</b>	Projects that an organization would buy such as for a factory, store, or office
13. <b>Engineering Household Solutions</b>	Projects that would be used at home
14. <b>Environmental Engineering</b>	Projects that address the environment and its effect on organisms/systems such as for recycling, renewable energy, or sustainable design

## Project Awards

Exemplary projects will be awarded for their achievements. All submitted projects are considered together for overall awards. Each of the four category awards will be presented to the best project in its respective category. Additional awards may be presented at local Innovation Day events outside of New York. Judges will holistically evaluate the finalists in each category and top projects will receive the most appropriate awards; a project may only receive one category award.

### Overall Awards

	Eligibility	Rubric
<b>Website Design</b> – 1 <sup>st</sup> , 2 <sup>nd</sup> , & 3 <sup>rd</sup> place awards for the best design of a website in presenting a project	<i>Portfolio</i>	<i>Process Rubric</i>
<b>Promotional Video</b> – 1 <sup>st</sup> , 2 <sup>nd</sup> , & 3 <sup>rd</sup> place awards for effective and creative video to convince viewers of a project’s value	<i>Portfolio</i>	<i>Process Rubric</i>
<b>AI &amp; Machine Learning</b> – 1 <sup>st</sup> , 2 <sup>nd</sup> , & 3 <sup>rd</sup> place awards for the projects which best documents its prototype’s innovative use of AI	<i>Portfolio</i>	<i>Process Rubric</i> <i>AI Usage</i>

### Category Based Awards

<b>Best in Engineering Design Process</b> – best use of the engineering design process to develop a project idea (1 award per category)	<i>Portfolio</i>	<i>Process Rubric</i>
<b>Best in Mechanical Engineering</b> – best use of engineering to create a physical prototype that functions correctly to solve a problem (1 award per category)	<i>NY Pitch Rooms &amp; Gallery</i>	<i>Product Rubric</i>
<b>Best in Industrial Product Design</b> – best use of applied art to manufacture a prototype with a professional appearance (1 award per category)	<i>NY Pitch Rooms &amp; Gallery</i>	<i>Product Rubric</i>
<b>Best in Pitch Award</b> – best delivered presentation to convince viewers of the project’s merit, scored by official judges (1 award per category)	<i>NY Pitch Rooms</i>	<i>Product Rubric</i>

### NY Pitch Room Awards

<b>Peer Choice Award</b> – the project voted by students for the best presentation (1 award per category)	<i>NY Pitch Rooms</i>	<i>Product Rubric</i>
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# CIJE Innovation Day Rules & Regulations

## 1. Academic Integrity

Academic integrity is essential in any scholarly pursuit, including engineering capstone projects. Everything you present should be original work or attributed to its original creators. All research should be properly cited.

It is okay to take inspiration from other people's work, including example projects online, but you should make sure to cite them as a source. You also need to differentiate between what you copied and what you created yourself.

This is especially relevant to using Artificial Intelligence platforms, such as ChatGPT. ChatGPT has become a valuable resource for many students and can also offer assistance on engineering projects. However, it should be used as an aid to understand concepts. It cannot be relied on to solely design, solve, or code a student project. Any content used from ChatGPT should be cited as you would any other source. You may wish to independently corroborate its information using other sources.

**Transparency about your use of AI is crucial. Highlighting your sophisticated use of AI can showcase your ability to effectively integrate advanced technologies into your project. Be clear about where and how you have utilized AI platforms, and ensure that all AI-generated content is properly attributed.**

For details on how to cite ChatGPT, see: <https://apastyle.apa.org/blog/how-to-cite-chatgpt>

## 2. Team Composition

Capstone groups should consist of 2-4 students, with 3 being an ideal number for effective collaboration. Teams with 1 student and teams with 5 or more students may present projects but will be ineligible to win awards.

## 3. Project Requirements

Capstone projects must solve a problem for an end user and benefit society in some way. Projects must also incorporate the engineering skills taught in the CIJE engineering class.

- (A) All projects must utilize coding a microcontroller such as an Arduino or Raspberry Pi. Even app-based projects must incorporate a microcontroller.
- (B) All projects must utilize electronic components. Projects should include at least one input (e.g., sensor or button) and one output (e.g., light, sound, motion, or display).

## 4. Project Safety

Safety is paramount in working on capstone projects. Projects may not physically harm or be intended to cause harm to any individuals.

- (A) No weapons are permitted. This includes making weapons or any device intended to cause physical harm. This also includes incorporating any existing weapons into your project. However,



weapons may be simulated for the purposes of a security-related project. If your project is security-related, please first check with your teacher.

- (B) It is not permitted to work with human or animal tissues and products. It is also not permitted to work with dangerous pathogens. If your project is related to human or animal health, please first check with your teacher.
- (C) Unsafe chemicals are not permitted to be used. If your project needs a chemical, please first check with your teacher.
- (D) Age-restricted substances are not permitted to be used in projects. This includes alcohol, marijuana, tobacco, vaping, etc. However, age-restricted substances may be simulated if critical to the project. For example, a project addressing alcohol abuse can use rubbing alcohol to simulate alcohol vapors. If your project is related to age-restricted substances, please first check with your teacher.
- (E) No projects may promote or facilitate illegal behavior or actions.

## 5. Project Budget

Each team is allocated \$75 for their capstone project. This budget limit is set to encourage efficient budget management, foster innovation without over-reliance on high-tech solutions, and to ensure fairness and equity among all competitors.

- (A) Teams can use their budget for purchasing project components or for project related expenses (e.g., order shipping, poster board, website hosting, etc.).
- (B) Parts from the CIJE kits are permitted to be used for free.
- (C) Office supplies (e.g., paper, pens, etc.) are permitted to be used for free.
- (D) Materials from school or home may be used within reason for free in support of the project; for example, a bicycle safety project may use a bicycle from home for free. However, expensive electronics must be purchased within the budget. Please check with your teacher before using any component from school or home.
- (E) Prototyping materials must be included in the budget. For example, raw materials used in prototyping from 3D printing, laser cutting, or wood working must be included.
- (F) If you are using any free components, your bill of materials should have two price columns: the left column noting any component used for free as \$0 and the right column noting the actual price of all the items used.

## 6. Project Submissions

Teams must meet the various project submission deadlines outlined above. This includes submitting your project portfolio prior to the CIJE Innovation Day. Portfolio submissions are required to be eligible for the national awards, see award breakdown table above. Portfolio submissions which are inaccessible to judges or lacking substantive content will not be judged.

## 7. CIJE Innovation Day Project Demonstrations

Safety is paramount when demonstrating capstone projects. The following projects are not permitted to be demonstrated live at the CIJE Innovation Day without prior written approval from The CIJE Team.

There will be an option to request demonstration approval on the final project submission form. Instead, these projects may be demonstrated using video footage.

- (A) Prototypes with exposed sharp objects (e.g., blades, needles, etc.)
- (B) Prototypes which fire projectiles (e.g., balls)
- (C) Prototypes requiring large quantities of water (e.g., aquarium or kiddie pool)
- (D) Prototypes using loud sounds that can cause physical harm (e.g., 110 dB or greater)
- (E) Prototypes using high voltages (e.g., 30V or greater)
- (F) Prototypes using lithium batteries in non-standard operating conditions
- (G) Prototypes using unsafe levels of radiation (including electromagnetic)
- (H) Projects involving biological samples (e.g., human, animal, bacteria, etc.)
- (I) Projects involving fire or open flames
- (J) Projects involving drones

## 8. CIJE Innovation Day Code of Conduct

CIJE Innovation Day is a time to celebrate student engineering achievement. It is also a time to encourage ethical and responsible engineering practices. All participating students must adhere to the following code of conduct.

- (A) **Respect:** Respect the principles of the Jewish community and promote the values of *achdut* (unity) and *chesed* (kindness). Treat all participants with respect and courtesy, including fellow students, mentors, judges, organizers, and volunteers. Discrimination, harassment, or offensive behavior of any kind will not be tolerated. Foster an inclusive environment where everyone feels welcome, regardless of background or physical characteristics.
- (B) **Integrity:** Uphold the Jewish values of *emet* (truth) and *yashrut* (honesty). Present original work and give appropriate credit to any external sources, including ideas, data, or materials. This includes the use of Artificial Intelligence platforms, such as ChatGPT. Plagiarism, cheating, or dishonesty in any form will not be tolerated.
- (C) **Safety:** Maintain the Jewish value of *pikuach nefesh* (preserving life). School chaperones are responsible for supervising their students to ensure their well-being and their adherence of Jewish community values. Harassment or aggressive behavior, whether verbal or physical, will not be tolerated. When working with engineering projects, follow proper procedures for handling tools and materials to protect both yourself and any bystander. Promptly report any safety concerns to the organizers.
- (D) **Environment:** Help sustain a healthy environment by following the Jewish principles of *bal tashchit* (do not waste/destroy) and *lashon hara* (harmful language). Dispose of waste properly, keep work areas tidy, and respect the facilities/equipment provided. Abstain from disparaging comments, profanity, and vulgar language.
- (E) **Conflict Resolution:** Address any difficulties constructively, respectfully, and professionally. Students should report any conflicts to their school chaperones. If additional conflict resolution is necessary, seek assistance from the event organizers