2021 Francis Rhodes Montgomery Design Competition Details

General Information
The Francis Rhodes Montgomery Design Competition (FRMDC) is established in memory of Francis Rhodes Montgomery to further the field of mechanical engineering and in memory of his wife, Margaret Montgomery, who was a dedicated supporter of the competition. It is aimed at students of mechanical engineering with the goal of recognizing and regarding innovative design efforts, the practicality of the design, and the ability to present the design in a clear and understandable manner.

The competition is open to students currently enrolled in the University of Hawaii, College of Engineering, Department of Mechanical Engineering’s (UH COE DME’s) Senior Design Class (ME 481/482) as qualified by the course instructor(s).

Awards, consisting of cash prizes in amounts determined by the ASME Hawaii Senior Section in consultation with the UH COE DME will be provided for 1st, 2nd, place competitors. The judging panel consists of at least three engineers from the community as selected by the ASME Hawaii Senior Section. Competitors are judged on the following criteria:

1. Content
   a. Extent of subject interest to a technical audience.
   b. Credit given to others, as appropriate and required, for material or contributions to project.
   c. Knowledge of subject.
   d. Level of independence and originality of work.
   e. Technical details.

2. Organization
   a. Clear presentation of problem and purpose
   b. Novel approaches to project.
   c. Background information to introduce audience to project.
   d. Logical and organized presentation.
   e. Conclusion supported by data presented.

3. Prototype
   a. Fulfillment of project goals
   b. Effective, concise demonstration of design and success criteria.

4. Responses to Questions
   a. Ability to respond to technical questions.
   b. Use of technical terminology and proper English.
   c. Appropriateness of personal appearance.

Competition Format
The competition will consist of a formal presentation via zoom and a formal poster presentation and additional questions session via zoom. There are two independent presentation sessions to give the judges a second chance to ask questions and compare the projects after they have seen all the project presentations.

1 This means multidisciplinary teams must focus on the mechanical engineering aspects and details of their project.
**Formal Presentation**
The formal presentation is the most heavily weighted portion of the competition. The formal presentation follows the same format we have used all year. In fact, that is the point, to discover if you have learned to communicate your design: the background, objectives, technical details (modeling and testing), and make valid conclusions. In addition to being a heavily weighted part of the completion, this presentation counts as your final presentation for the course and is evaluated by both Dr. Trimble and the competition judges as such.

- You have 40 mins total.
  - You must leave 10 mins for questions
- Everyone must present.
- Your audience is the FRMDC judges. Judges are engineers from local companies. Plan accordingly. Be sure to effectively organize your presentation.
- Follow the same rules and format we have used all year for slides (slide number, initials, etc.)
- Focus on technical content. The project is “complete” so project management is only presented when applicable (i.e. budget or time constraints – but don’t use this as an “excuse”).
- Incorporate a very brief video(s) to facilitate understanding of the prototype and final results/conclusions.

**Poster**
The formal poster presentation provides the judges a second opportunity to ask questions they may have missed earlier. The judges will have already briefly reviewed your poster. You need to generate a formal “Poster Presentation”. Only 1-2 student need to speak. See the poster presentation instructions for more details. You can use a few slides with content that mimics the graphs, images, models, tables, etc. on the poster instead of trying to point the full poster, which is difficult on a single computer screen, if you wish.

**Additional Information**
- All students must be present during the introduction from 10:00-11:15 and the awards from 15:00-15:30. Otherwise you only attend your team’s presentation and poster presentation.
- Everyone on your team must be in the waiting room prior to your presentations start times.
- One person on your team will share their screen to display your slides. You must send a copy of your slides in pdf format to Dr. Trimble (atrimble@hawaii.edu) by 0800 on 10 Dec.. Use subject: “[FRMDC slides] team name”. The slides are a contingency against technical difficulties – in the case of technical difficulties you should get comfortable saying “next slide, slide x” when you advance slides so the judges know what to look at.
- Time limits are strictly enforced. It is important to stay on time – for fairness to other teams. I will provide a 1 min warning sign will interrupt your presentation and start taking questions with 10 minutes remaining - whether you are done or not.
- All students must have a video feed.
- All students must present at least one slide during the presentation session.
- Per standard zoom etiquette if you are not actively presenting you should mute your microphone.
- Everyone on your team must be present during the poster session and the appropriate system expert should answer the judges’ questions.
**Competition Schedule**
Dec 10 – 10:00-15:30 via zoom.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>10:00-10:15</td>
<td>Introduction (ASME Senior Section)</td>
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<tr>
<td>10:15-13:10</td>
<td>Oral Presentations</td>
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<tr>
<td>10:15-10:55</td>
<td>1. WeCDI</td>
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<tr>
<td>11:00-11:40</td>
<td>2. Kanaloa</td>
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<td>11:45-12:25</td>
<td>3. DBMI</td>
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<td>12:30-13:10</td>
<td>4. UHDT</td>
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<tr>
<td>13:30-16:00</td>
<td>Poster Presentations and Hardware Demonstrations</td>
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<tr>
<td>13:30-13:45</td>
<td>1. Kanaloa</td>
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<td>13:50-14:05</td>
<td>2. UHDT</td>
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<tr>
<td>14:10-14:25</td>
<td>3. WeCDI</td>
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<tr>
<td>14:30-14:45</td>
<td>4. DBMI</td>
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<tr>
<td>14:45-15:00</td>
<td>Judges’ Deliberation</td>
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<tr>
<td>15:00-15:30</td>
<td>Awards</td>
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</tbody>
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**Common issues:**

1. **Convey Requirements:** The consensus among the judges year after year is many students and teams need to improve their ability to clearly but concisely present the design requirements, how your design specifically meets the requirements, and how you verified that the requirements were met. Generally, the judges stated that the winning teams were the teams who communicated this best. Note this often isn’t a dry item-by-item exhaustive coverage of your FR tracking tables.

2. **Technical Depth:** The judges also pointed out that you should delve deeper into the technical aspects of your project and provide more technically sound analyses of your design. You need the ability to tell future employers a story that showcases your ability to perform technical analysis in detail during an interview.

3. **Professionalism:** The judges stressed that you should always put on a professional appearance when you present your work, even in the case of a video/zoom presentation. This includes the dress code, your background, your posture, and your behavior on camera when you are not talking (no backward ball caps, lounging on the couch, etc.). Please keep a professional attitude towards formal presentations, especially when the judges may be your potential employer or interviewer in the future.

4. **Acknowledgment:** It is important to have an Acknowledgment slide which lists all mentors (including the professors and TA), as well as sponsors and those who provided expertise, facilities (Mr. Lewis Moore), time, etc. Even when your presentation time is limited, you need to acknowledge your benefactors.

5. **Answering Questions:** Many students need to work on their efficiency and accuracy in answering questions. This requires you to have a sound understanding of the technical aspects of your project and where to quickly find the back-up material in your back-up slides. Furthermore, it is important to listen to the question, understand it, and only then answer it. Many students rush to answer questions before they are even fully asked. Students often cut off the judges in mid question. Listen to the question and understand what is being asked before rushing through an answer.

6. **Presenting:** you have been told to not straight up read notes when you are presenting. This is also true for virtual presentations unless you are really good at disguising the fact
that you are reading, which most engineers aren't (otherwise you'd be in acting & theatre).
Sound enthusiastic about what you're saying - speak up and don't use monotones (and
don't mumble).