



NM Mathematics, Engineering, Science, Achievement (NM MESA), Inc.
32nd Annual MESA Day & MESA USA National Engineering Design Competition
VOLUNTEER INFORMATION

It is that time of year again where NM MESA is once again looking for volunteers for their annual competitions. This year our competitions will be held over (2) days as follows:

MESA USA NATIONAL ENGINEERING DESIGN COMPETITION:

March 24, 2020 – AFRL NM STEM Academy; 11:30 AM – 6:00 PM

MESA USA Volunteer Link: <http://www.cvent.com/d/pnq2p7>

32nd ANNUAL NM MESA DAY COMPETITION:

March 25, 2020 – Albuquerque Convention Center; 8:00 AM – 3:00 PM

MESA Day Volunteer Link: <http://www.cvent.com/d/2nq20g>

COMPETITION OVERVIEW: All of our events will address the topic of Energy as a Grand Challenge. Majority of our roles do not require any technical background and ALL volunteers are welcome. Please indicate during registration your experience/preference to help with placement.

MESA USA - Partnered with AFRL NM STEM Academy:

Teams will compete in 3 events On Site and 1 event will be graded prior (Report). On Site Volunteers for this event will need to provide additional information to receive security clearance to Kirtland Air Force Base.

Arduino Based Solutions for Humans asks students to implement the Human-Centered Design approach to find a client in their community who has a need, engineer a solution for this need using Arduino as the key component, and present their solution and recommendation(s) for next steps.

- **Technical Presentation & Interview:** The objective is to provide an overview of the prototype functionality including a technical explanation of the mechanical operations, software operations, and integration of the two.
- **Poster & Symposium:** The objective is to provide an overview of their project, highlighting key points of the design process including relevant data, presenting the resulting prototype, and share conclusions and recommendations for further development.
- **Prototype Pitch:** The objective is to prepare a presentation that demonstrates the business value of the product including a market analysis and marketing plan.
- **Project Report: Sponsored by Los Alamos National Laboratory.** The objective is to provide an overview of the design process and demonstrate team's effective use of the Engineering Design Process. Registration for this role due 3/6/2020.

This role (Project Report) does not require actual attendance at our MESA Day event and can be done from anywhere on a flexible time frame. The only technical requirement is an internet connection that can review PDFs. All judges will be trained via webinar session(s) as needed and will be provided with adequate grading instruction via email/webinar. Assignments will be made and items will be emailed on March 6 with a due date for return of March 23. Each judge will be assigned up to 10 items to grade. Each item takes an average of 15-30 minutes resulting in a maximum 5 hour commitment over a 2 week period.

MESA Day -Teams will compete in 4 events:

- **On Site Science-Energy Science Escape: Sponsored by Northrop Grumman and Wells Fargo Foundation.** Teams will need to work together to successfully solve 10 mini-challenges that will include a multitude of measuring, circuitry, architecture concepts and more... a high wattage and creative combination of STEM fun! Teams will need creativity and adaptability to succeed in this code cracking event.
- **On Site Math-Watts Up? Calculating Energy Efficiency: Sponsored by PNM.** Teams will work together to investigate the numbers relating to energy efficiency and answer questions. You'll evaluate data, use measurement tools and check out real-life examples. Learn about different alternative energy technologies.
- **On Site Engineering-Generating Energy: Sponsored by Sandia National Laboratories.** Teams will work together in a hands on building project to generate energy.
- **Prepared Design-Living Off the Grid: Build a Smart House: Sponsored by Applied Research Associates.** Teams are tasked with designing and modeling a self-sustaining and energy efficient home for a client. Teams will design a home, create a model of the home, and determine what makes it self-sufficient and sustainable. Accompanied with the model, all teams should have a floor plan (blueprint), brochure and a prepared 3-minute pitch of their home. *There are additional time requirements for this event to allow for impound and pitch presentations (7:30 AM-4:30 PM).*

Any Questions—Anita Gonzales, NM MESA Program Coordinator. O: 505-454-3027, C: 505-718-9517, E: anita@nmmesa.org.

All registrations for need to be completed no later than 12:00 PM, March 20th, 2020.

Thank you for helping to “Build Tomorrow....Today!”