



**2024 NM MESA PROFESSIONAL DEVELOPMENT CONFERENCE  
EMBASSY SUITES, ALBUQUERQUE  
AUGUST 29-30, 2024**

**THURSDAY, AUGUST 29, 2024:**

TIME	DESCRIPTION	LOCATION
8:00-11:00	Advisor Registration	Registration Desk
9:00-11:30	New Advisor Training	Sandia IV-V
11:30-12:45	General Session A <ul style="list-style-type: none"> <li>Ling Faith-Heurtz, NM MESA Executive Director</li> <li>Anita Gonzales, NM MESA Deputy Director</li> <li>Dr. Kimberly Scheerer and Shawndean Smith, NM MESA - MESA Mayhem</li> </ul>	Sandia IV-V
1:00-4:00	Breakout Sessions	

	SANDIA I	SANDIA II	SANDIA III	SANDIA IV-V	SANDIA VI	SANDIA VII	SANDIA VIII	OCOTILLO I
1:00-2:00 SESSION 1	NM Public Education Department: College & Career Readiness Bureau	NM Educational Assistance Foundation	Explora: Microprocessors and Sensors	NM MESA: ThinkWave	Sunspot Solar Observatory: Do You See What I See?	NMT Mechanical Engineering: Miner Mayhem MESA Bot	NMHU Center for Teaching Excellence	Jacob Pepperseed
2:15-3:15 SESSION 2	NM Public Education Department: Math & Science Bureau	Society of Women Engineers	Explora: Incorporating Apps Into a Project		Sunspot Solar Observatory: From Pinholes to Telescopes	NMT Mechanical Engineering: Miner Mayhem Rover Program	NM Ag in the Classroom: NMAITC Resources	Master of Science for Teachers Program at NMT
3:30-4:00 PARTNER	NM Public Education Department: Math & Science Bureau	Society of Women Engineers	The Underrepresentation Curriculum		NM Museum of Space History	NM FIRST Robotics	NM MESA: MESA USA Curriculum	NMSU Arrowhead Innoventure Programs
4:00-5:00 OH DEMOS			Air Force Research Laboratory		NM Museum of Space History	NM FIRST Robotics	NM Ag in the Classroom	UNM Engineering

TIME	DESCRIPTION	LOCATION
4:00-5:00	Partner Open House	Pre-Convention Hallway and Demo Rooms
6:00-8:00	MESA Recognition Banquet <ul style="list-style-type: none"> <li>NM MESA Board of Directors</li> <li>2024 MESA USA National Student Teams: Chaparral Middle School and nex+Gen Academy</li> <li>2024 Guenther Advisor Achievement Award Recognition: Janice Badongen Patal-e, Espanola Valley High School and Rina Viramontes, Chaparral Middle School</li> <li>2024 MESA Day: Chaparral Middle School and Valley High School</li> <li>2024 Governors STEM Challenge NM MESA Teams</li> <li>Regional Highlights and Advisor Recognition</li> </ul>	Sandia IV-V

**FRIDAY, AUGUST 30, 2024:**

TIME	DESCRIPTION	LOCATION
7:00-8:00	Day 2 Sign In and Breakfast	Hotel Lobby
8:00-9:00	General Session B <ul style="list-style-type: none"> <li>Breezy Gutierrez, NM PED College and Career Readiness Bureau Director</li> </ul>	Sandia IV-V
9:15-3:00	Breakout Sessions	
11:30-12:30	Hotel Check Out-Box Lunch Pick Up	Sandia IV-V
3:00	Event Dismissal	

	SANDIA I	SANDIA II	SANDIA III	SANDIA IV-V	SANDIA VI	SANDIA VII	SANDIA VIII
9:15-10:15 SESSION 3	NMSU STEM Outreach: Tinkercad	STEM Innovation Network for NM	Explora: Renewable Energy	Northern New Mexico College	STEM with Cog	NMT Mechanical Engineering: Miner Mayhem MESA Bot	NM Ag in the Classroom: Engineering and Agriculture
10:30-11:30 SESSION 4	NMSU STEM Outreach: ACRES	LANL Foundation Inquiry Science	Alliance for Indigenous Math Circles	Northern New Mexico College	Project ECHO/ NMSTA	NMT Mechanical Engineering: Miner Mayhem 150g Battle Bot	NM Ag in the Classroom: Engineering and Agriculture
12:30-3:00 REG MTGS	Southwest Region	North Region	West Region		Central Inner Region	North Central Region	Southeast Region

## 2024 NM MESA PROFESSIONAL DEVELOPMENT CONFERENCE WORKSHOP DESCRIPTIONS:

### ALLIANCE OF INDIGENOUS MATH CIRCLES (AIMC)

*Presenter(s):* Donna Fernandez and James Taylor

*Sessions Available:* 4

Making connections is what mathematicians do. In the case of the Alliance of Indigenous Math Circles, we use the time-tested "Math Circle" model to connect mathematicians from around the world with students and K-12 teachers serving those (primarily indigenous) students. Math circles focus on engaging problems as opposed to exercises. School mathematics and the accountability systems that attend it are grounded in solving exercises whereas life and the demands of the future depend on the ability to solve problems. Come participate in math circle problems and activities designed to engage students in enriching math problems. This will help all advisors to have access to resources for your MESA program. **Limited to 20 participants per session.**

### EXPLORA

*Sessions Available:* 1

Microprocessors and Sensors: Come and explore how to code with Circuit Playground Express and Microbits. Learn how to use a variety of sensors with Makey Makeys and Microbits. Walk away with ideas for projects to use with your students and resources to continue learning. **Limited to 20 participants per session.**

*Session Requirements:* *Workshop equipment will be available, but it is suggested to bring a personal laptop.*

*Sessions Available:* 2

Incorporating Apps into a Project: Explore how to create simple apps using free online resources such as Code.Org's App Lab. Walk away with ideas for projects to use with your students and resources to continue learning. **Limited to 20 participants per session.** *Session Requirements: Workshop equipment will be available but it is suggested to bring a personal laptop.*

*Sessions Available:* 3

Renewable energy - Water Power: Explore clean renewable energy from the waves, tides, and currents. Roll up your sleeves for some fun activities ready for your classroom that connect to math and science standards. Learn about local research as you explore clean renewable energy! **Limited to 20 participants per session.**

### JACOB PEPPERSEED

*Presenter(s):* Jacob Pepperseed

*Sessions Available:* 1

Space Biology, New Mexico Chile, and STEAM Education: Former NASA engineer, plant scientist, and current UNM PhD student shares the NASA Space Chile story and discusses ways to include space biology activities with your students. From growing NM Chile in the classroom for NASA research, to learning Computer Animated Drawing (CAD), 3D printing and engineering design. Your students can gain experiences in STEAM subjects through the inspiration of growing fresh food for astronauts during NASA missions. **Limited to 20 participants per session.**

### LANL FOUNDATION INQUIRY SCIENCE EDUCATION CONSORTIUM (ISEC)

*Presenter(s):* Kersti Tyson, Doris Rivera, and Paul LeFrancois

*Sessions Available:* 4

The Inquiry Science Education Consortium (ISEC) program at the LANL Foundation has developed a framework for integrating Culturally Sustaining, Social Emotional Learning, and Inquiry based practices for science instruction. Come participate in an interactive session that models the practices you can use in your classroom. **Limited to 20 participants per session.**

### MASTERS OF SCIENCE FOR TEACHERS (MST) PROGRAM AT NMT

*Presenter(s):* Leslie Clark and Brendajulissa Diaz

*Sessions Available:* 2

Join us for a presentation on how to successfully prepare for STEM related competitions including planning your training each day/week, incorporating it into everyday lessons, preparing students, and building your program. Additional information will be provided on the STEM Master's program at NMT. By implementing a structured timeline and providing the necessary resources, teachers can guide students to success in these enriching activities. These experiences not only enhance students' knowledge and skills but also ignite a lifelong passion for STEM fields. The MST program recruits diverse educators to engage in graduate-level STEM courses led by NMT faculty who are experts in their fields. Recognizing that our students/teachers work full-time in classrooms, the MST is a part-time, online program with in-person course options in the summer. For the last 10 years, teachers have received scholarships that pay for 90% of the cost of the program. **Limited to 20 participants per session.**

### NM AG IN THE CLASSROOM

*Presenter(s):* Shae Devers

*Sessions Available:* 2

Introduction to NMAITC Resources: Get ready to "slice up earth's land resources" by learning just how important agriculture is to our daily lives through our food, fabrics flowers, forestry, and fuel. By joining in on this session, you will get to explore more about the educational resources New Mexico Agriculture in the Classroom has available for FREE to teach your students about agriculture through the lens of STEM and check out the careers that connect directly to agriculture – it's way more than just farming and ranching! **Limited to 20 participants per session.**

*Sessions Available:* 3,4

Engineering and Agriculture: Going Up! No, not in an elevator... let's talk vertical farming, drones in the sky, and laser leveling through precision agriculture. NM Ag in the Classroom will also help you "dive deep" into how you can teach about agriculture and engineering at the same time and also seeing the true importance of the animal (livestock) side of agriculture – it's "Ag"mazing what we can do with crops and livestock! Join us to learn how to incorporate it all into your curriculum this year with these FREE resources, and so much more! **Limited to 20 participants per session.**

### NM EDUCATIONAL ASSISTANCE FOUNDATION

*Presenter(s):* Ruben Reyes

*Sessions Available:* 1

Paying for College or Career School – Scholarships, State and Federal and Aid: This session will provide information on schools, careers, scholarships, state aid, and general knowledge about the Free Application for Federal Student Aid (FAFSA). Advisors will gain tools to help ready their students. **Limited to 20 participants per session.**

### **NM FIRST ROBOTICS (GEAR STEM)**

*Presenter(s):* Zac Van Note and Jim Jackson

*Sessions Available:* Partner

Participants will learn about the FIRST Robotics Program. Explore small and medium size robots that participants can drive around in a partial game field. **Limited to 20 participants per session.**

### **NM MESA**

*Presenter(s):* Anita Gonzales

*Sessions Available:* Pre-Conference

It's MESA Time, Now What?: This session is open to New Advisors or return advisors with pre-approval. Come learn about what the requirements are and how to build a successful MESA program.

*Presenter(s):* Terry Ramirez

*Sessions Available:* 1

ThinkWave: Do you need additional assistance with the MESA Information Collection System. Learn the basics and get any questions answered you may have about this required data collection tool.

*Presenter(s):* Nicholas Kunz

*Sessions Available:* Partner

NM MESA is part of a larger MESA USA collaborative organization. Come learn about the resources available to you within the MESA USA National Curriculum Framework. **Limited to 20 participants per session.**

### **NM MUSEUM OF SPACE HISTORY**

*Presenter(s):* Marie DeLeon, Michael Shinabery, and Mackette Kark

*Sessions Available:* Partner

Join us for our "Roadshow," where we provide a brief demonstration of the educational programs we offer. This interactive demonstration gives the audience a good overview of the educational opportunities the museum provides for teachers and schools. **Limited to 20 participants per session.**

### **NM PUBLIC EDUCATION DEPARTMENT: COLLEGE AND CAREER READINESS BUREAU**

*Presenter(s):* Alexandra Lutz

*Sessions Available:* 1

Join the College and Career Readiness Bureau for an overview of career-connected learning initiatives, including Careers2Communities math instructional practices, CTE funding and approved Programs of Study, and Career and Technical Student Organizations. **Limited to 20 participants per session.**

### **NM PUBLIC EDUCATION DEPARTMENT: MATH AND SCIENCE BUREAU**

*Presenter(s):* Shafiq Chaudhary, Patricia Gharrity, Lisa Sanchez, and David Ubinger

*Sessions Available:* 2

Building and Sustaining Equitable Outdoor Initiatives and Alignment with the Math and Science Instructional Scopes: New Mexico makes Outdoor Learning a priority for educators and students. The Outdoor Learning Classroom Initiative through the New Mexico Public Education Department has committed to assisting schools and districts in making outdoor learning an actionable, sustainable way of engaging students and increasing student achievement and social emotional well-being. We will highlight schools who have exemplified outdoor learning, as well as discuss how outdoor learning fits within the Instructional Scope. **Limited to 20 participants per session. Session Requirements: Participants are required to bring a personal laptop or phone.**

*Presenter(s):* Shafiq Chaudhary, Patricia Gharrity, Lisa Sanchez, and David Ubinger

*Sessions Available:* Partner

Join the New Mexico State Coordinators for The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) for an informational session on the nomination and application process. PAEMST is the highest recognition a K-12 educator may receive for outstanding STEM teaching from the United States Government. This session will provide updates to the 24-25 award cycle, resources, and supports that exist for New Mexico STEM educators to successfully submit their application. **Limited to 20 participants per session.**

### **NMHU CENTER FOR TEACHING EXCELLENCE**

*Presenter(s):* Veronica Black

*Sessions Available:* 1

In this Anthro/Zine workshop participants will learn how to make a ZINE and think creatively through anthropology. In this workshop you will use personal reflections, reviews, stories, poetry, creative writing, artwork, and photography inspired by anthropology to create ZINES. **Limited to 20 participants per session.**

### **NMSU ARROWHEAD CENTER INNOVENTURE PROGRAMS**

*Presenter(s):* Sandi Ringwood

*Sessions Available:* Partner

The Innoventure Challenge is a year-long competitive event hosted by Arrowhead Center at New Mexico State University and is open to middle and high school students throughout New Mexico and the Borderplex Region. Students are challenged to think like an entrepreneur and design a simple prototype out of an approved list of materials – all in a four-week timeframe that challenges them to put their team's ideas to the test quickly and create an innovative product. Three preliminary rounds are scheduled every school year, two in the fall semester and one for early spring semester. Student teams have the option to participate in individual rounds, or all rounds. Each round will have its own theme – and participants won't find out the theme until registration opens for each round. The surprise is all part of the challenge! Come join the session to find out more. **Limited to 20 participants per session.**

### **NMSU STEM OUTREACH CENTER**

*Presenter(s):* Rina Viramontes

*Sessions Available:* 3

Tinkercad is an online platform designed for learning CAD (3D modeling), electronics, and more. It provides 3D Modeling Tutorials: Step-by-step guides for creating and designing in 3D; Circuit Design: Tools for building and simulating circuits with Arduino and microprocessors; and Hands-On Learning: Opportunities to program and test various hardware components. Tinkercad is ideal for students and beginners looking to explore and develop skills in design and electronics. **Limited to 20 participants per session. Session Requirements: It is suggested to bring a personal laptop to fully participate.**

*Presenter(s):* Peter Dinger

*Sessions Available:* 4

This session will focus on Purposeful Questioning during STEM-Based instruction. Participants will work collaboratively in small groups and enhance their problem-solving skills. They will explore and receive resources from the After-school Coaching for Reflective Educators in STEM (ACRES). **Limited to 20 participants per session.**

### **NMT MECHANICAL ENGINEERING: MINER MAYHEM**

*Presenter(s):* Curtis O'Malley or Matthew Tyrell

*Sessions Available:* 1, 3

MESA Bot assembly and Coding: We will work through the instructional content associated with wiring and assembly. We will also open the code and add a few lines to show how it functions and how to run diagnostics on the RC receiver. **Limited to 20 participants per session. Session Requirements: Participants are required to bring a personal laptop and it is preferred to have one of the following installed, but could follow along with a txt editor. arduino ide- <https://www.arduino.cc/en/software> or arduino cloud editor - <https://docs.arduino.cc/arduino-cloud/guides/editor/>**

*Presenter(s):* Curtis O'Malley or Matthew Tyrell

*Sessions Available:* 4

150g Battle Bot Fabrication: This group would work through soldering and assembly of the Bot Components. We would work through the wiring diagram, component identification, and safety. **Limited to 20 participants per session, will work in groups of 2. Session Requirements: Need to be comfortable with soldering iron and assembly work.**

*Presenter(s):* Curtis O'Malley or Matthew Tyrell

*Sessions Available:* 2

Rover Program Info Session: We will walk through the instructional material on components, wiring diagrams, new electrical box design, safety, frame fabrication and modification. Improvements this year include a new motor selection, simplified power distribution/regulator, elimination of most soldering, and enclosed electrical box. Will show and discuss new bots but not actively assemble. **Limited to 20 participants per session. Session Requirements: Need a well-established understanding of coding for a teacher that wants to take a step up with their kids. High school level instruction on robotics and coding.**

### **NORTHERN NEW MEXICO COLLEGE**

*Presenter(s):* Steve Cox

*Sessions Available:* 3, 4

Good Vibrations - DIY VibroTactile and VibroAcoustic devices for treatment of a range of disorders: We will review the growing literature on the application of targeted and whole-body vibration therapy to the relief of symptoms for a huge variety of common physical and neurological conditions. We will then explore, and try on, a NM MESA build of a \$20 glove for Parkinson's patients and then consider how the subwoofers that shake your car as they drive by may be used in a vibrating table. **Limited to 20 participants per session.**

### **PROJECT ECHO FOR EDUCATION/NMSTA**

*Presenter(s):* Heather Summers

*Sessions Available:* 4

Phenomenon to Engage Students - with the NGSS, phenomenon is an important part of the standards, but also is a great way to improve the student engagement and critical thinking in the class. Through this session, we will explore what makes a good phenomenon and look at a variety of ways to incorporate phenomena into multiple aspects of the lesson flow. **Limited to 20 participants per session.**

### **SOCIETY OF WOMEN ENGINEERS**

*Presenter(s):* Janet Williams, Fran Stuart, and Additional SWE Members

*Sessions Available:* 2

Can you name a woman inventor? Many women innovators have been unrecognized or less heralded than they should have been for their outstanding contributions. This session will introduce you to four women who you may never have heard of. Even if you have heard of them, you may not understand the nature of their technical achievements or the extent of their contributions to society. These four women have made innovative contributions to the world that have arguably saved thousands of lives or transformed the world as we know it today. It will delve beyond their status as "first" or "only" woman and talk specifically about their technical contributions. **Limited to 20 participants per session.**

*Presenter(s):* Janet Williams, Fran Stewart, and Additional SWE Members

*Sessions Available:* Partner

Participants will gain an introduction to SWE, its outreach programs, its SWENext program for middle school and high school, and what resources it can provide to teachers and learners. **Limited to 20 participants per session.**

### **STEM INNOVATION NETWORK FOR NM**

*Presenter(s):* Monica Martinez-Archuleta and Kersti Tyson

*Sessions Available:* 4

JOIN THE MOVEMENT! STEM Educators throughout NM are advocating for the creation of a STEM Innovation Network. The STEM Innovation Network for NM would be designed to ensure every prek-12 student has the opportunities needed to develop the skills, knowledge, and practices needed to participate and thrive in the 21st Century. At the same time a STEM Innovation Network in NM will help to ensure that STEM pathways align with the STEM professions, industry, and community needs throughout New Mexico. To accomplish these aims, NM needs a systematic, coordinated effort to ensure that every student in our region has access to 1) STEM inquiry learning in school every day. 2) Access to Out of School STEM programs. 3) All middle school and high school students have access to STEM career pathways exploration.

In this session we will begin by asking educators to share their vision for STEM Education in NM, as well as hear what is working and what the needs are in terms of engaging students in STEM in school and outside of school. In addition, in this session, we will share a model for the STEM Innovation Network legislation and enactment, answer questions and get feedback from participants about how a STEM Innovation Network can support their work for engaging students in 21st Century STEM education, citizenship, and career pathways. **Limited to 20 participants per session.**

### **STEM WITH COG**

*Presenter(s):* Sharon Sivinski

*Sessions Available:* 3

A Climate Change Call to Action: In 2023, Yale Climate Opinion Maps found that 72% of people living in the United States believe that climate change is happening. However, only 46% believe it will harm them. Misconceptions like this abound because climate change is a complex problem. In this workshop, participants will learn

about two strategies to help students understand the complexity of our climate problems. 1.) Participants will gain an introduction to Climate Fresk's hands-on, brains-engaged approach to climate education as they use critical thinking skills to create a mural of connections. 2.) Participants will use infrared thermometers and warming plates to recreate a demonstration of CO2's ability to bounce infrared energy back to earth. A teacher packet includes a student worksheet, answer key, and teacher resource page. Both Climate Fresk and STEMwithCog aspire to inspire the desire in students to act now to build a better future. **Limited to 20 participants per session.**

**SUNSPOT SOLAR OBSERVATORY**

*Presenter(s):* Heidi Sanchez

*Sessions Available:* 1

Do You See What I See? A Lesson about Astronomical Imaging: Scientists often use different filters to help them gather information about a particular object, like the Sun. In this session, participants will examine the role that different filters play in viewing an astronomical object by building their own filter wheel. Participants will have an opportunity to analyze the strengths and weaknesses of this data collection process. **Limited to 20 participants per session.**

*Sessions Available:* 2

From Pinholes to Telescopes: Exploring Light, Optics, and How Telescopes Work: Through a simple sequence of activities, participants can explore the behavior of light through the use of a simple pinhole viewer and discover how light and optics work together to form images in our telescopes and cameras, and in our own eyes. **Limited to 20 participants per session.**

**UNDERREPRESENTATION CURRICULUM**

*Presenter(s):* Rachel Stagner

*Sessions Available:* Partner

The Underrepresentation Curriculum (URC) is a free, flexible curriculum for STEM instructors to teach about injustice and change the culture of STEM. Using tools such as data analysis, hypothesis creation, and investigation, students look critically at science through the lenses of equity and inclusion. By comparing the general population to similar data describing scientists, students can explore issues of social justice in STEM. Join us as we zoom with a URC editor in Portland, OR. Later in the school year, NM MESA will host a full session for interested teachers on how to implement and use the Underrepresentation Curriculum in your classroom and/or MESA time.

Rachel Stagner has taught science for the past five years at Templeton Academy in Washington, DC. She spent the previous 10 years teaching at McDaniel High School in Portland, Oregon before moving to DC to serve as an Albert Einstein Distinguished Educator Fellow at NASA Headquarters. Rachel started her career in education as a MESA Oregon Student Ambassador before becoming a MESA Advisor when she started teaching. She is committed to increasing the number of underrepresented students who pursue science as a career choice and using STEM education to address issues of social and environmental justice. She has been an editor of the Underrepresented Curriculum Project for the past 5 years. **Limited to 20 participants per session.**

**PARTNER OPEN HOUSE ORGANIZATIONS:**

<b>ORGANIZATION</b>	<b>LOCATION</b>
Air Force Research Laboratory	Sandia III + Table TBD
Computer Science Alliance	Table TBD
Deep Dive Coding Powered by CNM Ingenuity	Table TBD
Educators Rising NM	Table TBD
Future Cities	Table TBD
Jacob Pepperseed	Table TBD
Master of Science for Teachers at NM Tech	Table TBD
NM Acequia Association	Table TBD
NM Ag in the Classroom	Sandia VIII
NM Network for Women in Science and Engineering (NMMWSE)	Table TBD
NM First Robotics/Northrop Grumman	Sandia VII
NM Museum of Space History	Sandia VI
NM PED College and Career Readiness Bureau	Table TBD
NM PED Math and Science Bureau	Table TBD
NMSU Arrowhead Center Innoventure	Table TBD
NMT Mechanical Engineering	Table TBD
Northern NM STEAM Coalition	Table TBD
Sandia National Laboratories	Table TBD
Sante Fe Community College	Table TBD
Society of Women Engineers	Table TBD
STEM Boomerang	Table TBD
Sunspot Astronomy and Visitor Center	Table TBD
UNM HSC Office for Diversity, Equity, and Inclusion	Table TBD
UNM School of Engineering	Ocotillo I + Table TBD