

ASM MATERIALS CHALLENGE FOR STUDENTS

AN ASM MATERIALS EXPERIENCE

DEADLINE: MARCH 31, 2022

FIRST PRIZE: \$500 AND ENTRY AT EISENMAN MATERIALS CAMP (JULY 10-15, 2022)

SECOND PRIZE: \$300 AND ENTRY TO EISENMAN MATERIALS CAMP (JULY 10-15, 2022)

THIRD PRIZE: \$200 AND ENTRY TO EISENMAN MATERIALS CAMP (JULY 10-15, 2022)

The ASM Materials Education Foundation is extending a challenge to all US high school students to exhibit their knowledge of Materials Science & Engineering.

There is no charge to enter the Materials Challenge.

- Students should build something with their own hands: a testing or measurement device, structural comparison of materials for a specific purpose, other idea developed by student
- The device should be tested, using data that can be shown
- Findings should be presented in a two-page essay and in a three-minute video aimed at middle school students
- Students will need to send in their videos and essays but NOT the device.

Essays and videos must be received by March 31, 2022 at 5 p.m. Eastern Standard Time.



ASM MATERIALS CHALLENGE FOR STUDENTS

The ASM Materials Education Foundation is extending a challenge to all US high school students to exhibit their knowledge of materials science & engineering.

The ASM Materials Challenge for Students is open to all high school students, including:

- Students who previously attended an ASM Materials Camp®–Students and ASM Materials Club
- Students currently taking a Materials Science course
- Students whose teachers attended ASM Materials Camp®-Teachers

The Challenge will be to:

- build something with your hands
- test it
- present testing and findings via two-page essay and video to be viewed by middle school students

The Challenge information should include:

- background
- data with explanation of what data shows
- easy to communicate, particularly at middle school level

One example of a student challenge project would be “Putting the ‘arc’ in architect:

- Where the arc/arch is used; used in bridges
- Why some materials work well, and some do not (composites, cement, etc.)
- Create a criterion for themselves for pass or fail of use
- The arc would have to be able to support some load, determine load and test

Students may create one of three different types of projects:

- Testing device (tensile tester, impact tester, hardness tester, etc.)
- Measurement device (quantitative look at Oobleck, etc.)
- Structural comparison of materials (arc / arch, silo, roofs, tall structures, etc.)

Any of these projects is acceptable to use. There are many more possibilities of possible projects that would fit into the three categories above than those listed.

Entries will be the videos and a 2-page paper to describe the work. Students do not need to send in their device but should be sure that the video clearly shows the device, how it works, and the data from testing and use.

Checklist of Specifications:

- Background research & history
- Explanation of project & process
- Photo journal of progress
- Device or apparatus
- Data
- Description of device/project and whether it tested what was intended
- Video (for middle school students)

Students may work alone or with a partner. Students may work with an ASM member for assistance with concepts and information, but the ASM member may not substantially contribute to the device or data gathering of the project. If an ASM member was consulted, the member must write a paragraph about the extent of their involvement (The paragraph is separate from the two-page essay on the project).

Deadline is March 31, 2022 at 5 p.m. Eastern Standard Time. All materials should be clearly marked with student name and contact information.

Entries may be emailed to

foundation@asminternational.org or mailed to
ASM Materials Education Foundation
9639 Kinsman Road, Materials Park, OH 44073
ATTN: Materials Challenge for Students



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This top of this form should be filled out and the form submitted as a cover to the essay submission. Below is the judging criteria.

Name _____ Phone (best number to reach you) _____

Home Street Address _____

Home City, State, Zip _____

School Name _____ School City, State _____

Science/Engineering Teacher _____ Phone _____

Parent/Guardian(s) Name _____

I agree to allow my (or my child's) name and project to be used in marketing and other materials or social media postings by the ASM Materials Education Foundation. I further agree that I created, made, and tested this device on my own – with the exception of assistance that has been clearly spelled out in the essay and/or separate paragraph.

Student Signature _____

Parent Signature (If student under 18 years of age) _____



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For this Challenge, I will attempt to _____

The rubric below will be used by the judges to score projects and determine winner.

PROJECT TITLE	TOTAL				COMMENTS
Background research & history					
Explanation of project & process					
Photo journal of progress					
Device (actual build)					
Data					
Pass/fail description					
Video for middle school students					

POINTS FOR EACH CATEGORY		
Meets specifications 1-5	Good presentation & data 6-10	Exceptional presentation & data 11-15

Additional considerations in evaluating projects:

- Aesthetic appearance of device
- Cost of device
- Reproducibility of device
- Accuracy of data generated by device
- Video special effects
- Video appeal to middle school students

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