

## Maryland Engineering Challenges

[Note: these workshops require registration, please contact [mcahne@thebmi.org](mailto:mcahne@thebmi.org) to register.]

In 1991, the Baltimore Museum of Industry [BMI] established the Maryland Engineering Challenges, one of the first programs in the state to address the need for hands-on activities promoting technological literacy in students. The Challenges draw students from all over Maryland and have been embraced by school districts throughout the state for their effective integration of STEM concepts.



BMI is proud to partner with the Engineering Society of Baltimore, the Technology & Engineering Educators Association of Maryland, and KELVIN



to present the Maryland Engineering Challenges.



Additional support for the

2012 Challenges is generously provided by Northrop Grumman Electronic Systems, Constellation Energy Group and the Bechtel Group Foundation.

In addition, professional engineers volunteer to organize specific challenges



and draw additional assistance from



their professional engineering organizations through

**Bechtel Group Foundation**

financial and in-

kind support for each challenge throughout the year.

To discuss ways you or your company can contribute to the success of the Maryland Engineering Challenges, please contact Penelope Fallon at 410.727.4808 x129.

Baltimore Museum of Industry is a charitable 501(c)(3)

## 2012

# Maryland Engineering Challenges

### Competition Dates

Future City	Jan. 14
Wood Bridge	Jan. 14
Paper Airplane	Jan. 21
Safe Racer	Mar. 10
Cargo Airplane	Mar. 17
Theme Park	Mar. 24
Hovercraft	Apr. 14 at MSU
Robot	Apr. 14 & 15
Cargo Ship	Apr. 15
Straw Bridge	Apr. 28

*Encouraging students to use their minds and hands to solve problems.*

### Other Important Dates

**Coaches' Hands-On Workshops**  
Saturday, February 11, 2012 – 10 am to 12 pm

Learn the practical aspects of select Challenges!

**For the Safe Racer, Theme Park, and Straw Bridge Challenges.**

Coaches are able to work with the challenge engineers to explore the design and construction aspects of a project. Topics include: techniques for project construction, STEM connections, advice on mentoring students, and tips on written and oral reports

(The Theme Park workshop is less hands-on and more informational, due to the nature of the challenge project.)

Especially helpful for first-time Coaches and / or those with little previous engineering knowledge. Check individual challenge guides for details, or visit our website:

[www.thebmi.org](http://www.thebmi.org) → Programs

# 2012 Maryland Engineering Challenges



*"The Engineering Challenges were the projects that piqued my curiosity and encouraged me to pursue an education in Engineering."*

*—former MEC participant*



Baltimore Museum of Industry  
1415 Key Highway, Baltimore MD 21230  
410.727.4808 [www.thebmi.org](http://www.thebmi.org)

## Elementary School Level

### Paper Airplane

Grades 1 to 5

Design a paper airplane to safely fly a paperclip "passenger" as far as possible.

Competition Date: January 21, 2012

### Safe Racer

Grades 2 to 3

Build a safe and speedy sports car to allow "Eggbert" to survive a crash test and distance trial.

Competition Date: March 10, 2012

### Theme Park

Grades 4 to 5

Construct a moving theme park ride based on a literature curriculum reading.

Competition Date: March 24, 2012



Distance Trial

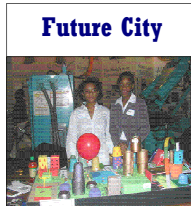
## Middle School Level

### Future City

Grades 7 to 8

Design a city using SimCity software and create a model of one area.

Competition Date: January 14, 2012



Future City

### Hovercraft

Grades 6 to 8

Build the fastest hovercraft to travel across the "Chesapeake Bay."

Competition Date: April 14, 2012



Straw Bridges

### Straw Bridge

Grades 6 to 8

Construct a plastic-straw Bridge to support a 6.5-lb. truck for one minute.

Competition Date: April 28, 2012

### Cargo Airplane

Grades 6 to 8

See information listed under High School

## High School Level

### Wood Bridge

Grades 9 to 12

Design a structurally efficient bridge to hold the maximum load before breaking

Competition Date:  
January 14, 2012



Efficiency Testing

### Cargo Airplane

Grades 9 to 12

Construct an electric airplane to fly tethered flights with and without cargo

Competition Date: February 25, 2012

### Robot

Grades 9 to 12

Construct a two- or four-leg robot to walk under direction over uneven terrain.

Competition Date: April 14 & 15, 2012

### Cargo Ship

Grades 9 to 12

Design and demonstrate a ship to carry containerized cargo over a water course.

Competition Date: April 15, 2012



Ship Launching

The purpose of the Maryland Engineering Challenges is to introduce students in grades 1 to 12 to the role of engineers in today's society and connect what students learn in school with real-world engineering concepts.

- \* develops comprehension, problem-solving, and communication skills
- \* encourages teamwork and confidence
- \* promotes meaningful mentor relationships

## Support the Maryland Engineering Challenges

Each year, approximately 1000 school-age children participate in the Challenges and bring an additional 2000 onlookers. BMI does not charge students to participate but depends on the financial support of individuals and businesses in the community. We need your help to ensure the future of this innovative program.

I WOULD LIKE TO GIVE A GIFT OF \$ \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ St \_\_\_\_\_ Zip \_\_\_\_\_

Email \_\_\_\_\_

Phone \_\_\_\_\_

Visa  MasterCard  Discover

Check (payable to Baltimore Museum of Industry)

Card # \_\_\_\_\_

Exp. \_\_\_\_\_ CVV \_\_\_\_\_ Today's Date \_\_\_\_\_

Signature \_\_\_\_\_

The Challenges rely on the help of volunteers at every level: organizing challenges, advising coaches, mentoring students, and judging competitions. Join us today!

- I am interested in volunteering. Please contact me with more information.
- I would like to discuss corporate involvement. Please contact me with more information.

Mail completed form to: Baltimore Museum of Industry  
1415 Key Highway, Baltimore MD 21230