



Inspiring. Exploring. Learning. It's Our Mission.

Dear Educator,

You may be aware that the Challenger Learning Center of Maine offers simulated space missions for students in grades 4-10, but you may not know that we also offer 14 different science modules both on and off-site for grades K-10th grade.

At the Challenger Learning Center, we believe exploration is the essence of learning. We also believe that there are no tools, no programs, and no techniques that will ever replace the direct involvement of a great teacher in a student's life. By integrating the classroom learning into our programming we are confident your students will reach new heights in discovering just how much fun learning can be!

While taking part in a Challenger Learning Center of Maine science module, students engage in hands-on learning that is tied directly to the Maine core standards. Although they will surely enjoy the experience, this is NOT an extracurricular activity. The purpose of the work students do either at the Center or at your site will compliment your in-class work, and provide activities that may not be possible in the classroom.

We are part of a network of nearly 50 non-profit Challenger Centers around the world that were established in honor of the astronauts lost in Challenger flight 51-L. We continue the educational spirit of the Teacher in Space mission through our programs. If your students are inspired by their experience then we have succeeded in one of our goals -- to get students excited about the fields of science, technology, engineering, and mathematics (STEM).

Rather than stop there, we want to help you foster your students' interest in STEM and turn that inspiration into a potential career path that is rewarding and full of opportunity! We offer a variety of on-going programming for children Pre-school to Grade 10 and their families, including:

- a bi-monthly free public science series that takes place on the last Thursday of the month from January through October, and;
- programs during all school vacations, and;
- periodic pre-K and after-school programming, and;
- on and off-site science modules for groups such as Boy Scouts, Girl Scouts, 4-H, etc.

To learn about upcoming events please visit our website, www.astronaut.org, and click on the mailing list link or send an email request directly to our Center Coordinator, Jennifer Therrien: jtherrien@clcofme.org.

If you are interested in taking part in a module but need help securing funding call or email for information on potential grant monies.

Before closing, I would like to share two other things you may not know about CLC: We house Maine's NASA Educator Resource Center (ERC), and we offer a variety of professional development opportunities at CLC. You are welcome to come take and/or borrow the many curriculum materials we have available. When you come to visit the ERC be sure to also ask about our on-going professional development opportunities. We are here to help you in any way we can.

On behalf of all of us at the Challenger Learning Center of Maine, thank you for all you do to inspire Maine's next generation of scientists and engineers.

Sincerely,

Susan Jonason, Executive Director

PS - Please be sure to visit our website or add your name to our mailing list to learn more about our student programs, teacher workshops, and upcoming events.



30 Venture Way
Bangor, ME 04401
(207) 990-2900 x3
www.clcofme.org

Grades 3 - 5

Science Modules

Includes
TOUR of the
Challenger
Learning Center's
MISSION CONTROL
and **SPACE LAB**

Through a diversity of programs we educate students and teachers in order to inspire an active lifelong passion for space and earth science.

OVERVIEW

- All of our modules are designed to inspire students to pursue higher levels of education, particularly in science, technology, engineering and mathematics.
- Modules are hands-on, minds-on learning programs rich in science content.
- Most modules are designed for groups comprising 5-26 students to engage in activities on science topics.
- Modules run for approximately two hours.
- Modules typically cost \$200, call for information and pricing.

Age Appropriate for 8+

Communication: A hands-on communication activity using headsets in Mission Control and the Space Lab to build a LEGO module, paper airplane or straw rocket.

Water Rockets (seasonal): Construction and launch of water rockets. Students are introduced to Newton's Law, measure rocket altitude, and evaluate the rocket like an engineer.

Paper Rockets: Construction and launch of paper rockets. Students explore the forces of flight, evaluate the rocket design, and measure rocket altitude.

Astronaut Life: A powerpoint on astronaut food and the difficulties of life in space, and hands-on activities.

Planets: Activities on planet distance, size, and characteristics such as Pacing the Planets, Planet Cards, Planet Mass & Volume, and Planet Models, OR station activities surrounding each planetary object.

Newton's Law: Activities demonstrating Newton's laws including Marble Roller Coasters and Balloons.

Space Art: Students create a modern Planet Painting, Fractal Pattern Key Chain, Alien Creature, or Planet Mobile.

Stories in the Sky: An overview of constellations from multiple cultural perspectives, followed by activities such as pinhole planetariums and "create your own" constellation and accompanying legend.

Age Appropriate for 9+ modules listed above, plus:

Bernoulli's Principle: Hands-on activities on Lift, Drag, Speed, and Shape.

ISS: Students engineer their own space station! They will learn about how the International Space Station is being built and what happens as the crew continually orbits the Earth. Students will create their own model of the ISS.

Model Mars: Students will develop a Mars Settlement based on what they learn about the Mars environment and human needs.

Older and Other modules listed above, plus:

Careers in Science: Students complete a problem-solving activity and learn about the work of scientists and engineers and some of the NASA spinoffs they have created.

Pick your own topic: Do you have a topic you would like us to teach about? We have many other potential modules on topics such as magnetism, solar energy, LEGO engineering or circuitry.

Also available: Orbit the Moon mini-mission for grades 4-5



Grades 3 - 5

Science Modules

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Age Appropriate for 8+

GREAT FOR
LARGE GROUPS

Paper Rockets: Construction and launch of paper rockets. The students explore the forces of flight, evaluate the rocket, and measure rocket altitude.

GREAT FOR
LARGE GROUPS

Astronaut Life: A powerpoint on astronaut food and the difficulties of life in space, and hands-on activities.

GREAT FOR
LARGE GROUPS

Planets: Activities on planet distance, size, and characteristics such as Pacing the Planets, Planet Cards, Planet Mass & Volume, and Planet Models.

Newton's Law: Activities demonstrating Newton's laws including Marble Roller Coasters and Balloons.

Space Art: Students create a modern art Planet Painting, make a Fractal Pattern Key Chain, Alien Creature, or Planet Mobile.

Stories in the Sky: An overview of constellations from multiple cultural perspectives, followed by activities such as pinhole planetariums and "create your own" constellation and accompanying legend.

Water Rockets (seasonal): Construction and launch of water rockets. Students are introduced to Newton's Law, measure rocket altitude, and evaluate the rocket like an engineer.

Age Appropriate for 9+

modules listed above, plus:

Bernoulli's Principle: Hands-on activities on Lift, Drag, Speed, and Shape.

ISS: Students engineer their own space station! They will learn about how the International Space Station is being built and what happens as the crew continually orbits the Earth. Students will create their own model of the ISS.

Model Mars: Your students will develop a Mars Settlement based on what they learn about the Mars environment and human needs.

Older and Other

modules listed above, plus:

Careers in Science: Students complete a problem-solving activity and learn about the work of scientists and engineers and some of the NASA spinoffs they have created.

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Grades 6 - 10

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- Modules run for approximately two hours.
- Modules typically cost \$250, call for information and pricing.

let's do science

Water Rockets (seasonal): Construction and launch of water rockets. Students explore Newton's Third Law and measure rocket altitude.

GREAT FOR
LARGE GROUPS

Paper Rockets: Construction and launch of paper rockets. Students explore the forces of flight and measure rocket altitude.

GREAT FOR
LARGE GROUPS

Astronaut Life: A powerpoint on astronaut food and the difficulties of life in space, and hands-on activities.

GREAT FOR
LARGE GROUPS

Planets: Activities on planet distance, size, and characteristics such as Pacing the Planets, Planet Cards, Planet Mass & Volume, and Planet Models.

Newton's Law: Activities demonstrating Newton's laws including Marble Roller Coasters and Balloons.

Bernoulli's Principle: Hands-on activities on Lift, Drag, Speed, and Shape.

ISS: Students engineer their own space station! They will learn about how the International Space Station is being built and what happens as the crew continually orbits the Earth. Students will create their own model of the ISS.

Model Mars: Students will develop a Mars Settlement based on what they learn about Mars and human needs.

Earth Systems from Space: Students use satellite photos to learn how scientists find out about weather phenomenon and landform changes. BINGO game is played to learn the landform features from space. May include computer activity: MY NASA DATA (computer access necessary).

Careers in Science: Complete a problem-solving activity and learn about the work of scientists and engineers and some of the NASA spinoffs they have created.

Stories in the Sky: An overview of constellations from multiple cultural perspectives, followed by activities such as pinhole planetariums and "create your own" constellation and accompanying legend.

Engineering and Design: A powerpoint presentation detailing the engineering design process and possible career paths. Students will design, test, redesign and share a rover or other vehicular object.

Pick your own topic: Do you have a topic you would like us to teach about? We have many other potential module topics such as magnetism, solar energy, or circuitry. Tell us the standard you are addressing and we can meet your needs.



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let's do science

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Paper Rockets: Construction and launch of paper rockets. The students explore the forces of flight and measure rocket altitude.

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Planets: Activities on planet distance, size, and characteristics such as Pacing the Planets, Planet Cards, Planet Mass & Volume, and Planet Models.

Newton's Law: Activities demonstrating Newton's laws including Marble Roller Coasters and Balloons.

Bernoulli's Principle: Hands-on activities on Lift, Drag, Speed, and Shape.

ISS: Students engineer their own space station! They will learn about how the International Space Station is being built and what happens as the crew continually orbits the Earth. Students will create their own model of the ISS.

Model Mars: The students will develop a Mars Settlement based on what they learn about the Mars environment and human needs.

Spectral Analysis and Electromagnetic Spectrum (not available when a mission is in progress): Students will build their own spectroscope and use it to identify an unknown gas. They will study how scientists use light to understand about objects in space. Light activities may include: radiation detection beads and secret messages.

Earth Systems from Space: Students use satellite photos to learn how scientists find out about weather phenomenon and landform changes. BINGO game is played to learn the landform features from space. May include computer activity: MY NASA DATA (computer access necessary).

Careers in Science: Complete a problem-solving activity and learn about the work of scientists and engineers and some of the NASA spinoffs they have created.

Stories in the Sky: An overview of constellations from multiple cultural perspectives, followed by activities such as pinhole planetariums and "create your own" constellation and accompanying legend.

Engineering and Design: A powerpoint presentation detailing the engineering design process and possible career paths. Students will design, test, redesign and share a rover or explore conductivity using circuitry.

Mission Patches: Learn about the history and significance of NASA mission patches, then design a patch to represent your school's Challenger Center Mission!



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Grades **K-2** Science Modules

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- Modules run for approximately two hours.
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Age Appropriate for **5+**

Communication: A hands-on communication activity using the headsets in Mission Control and the Space Lab to construct tangrams or build a LEGO module.

GREAT FOR
LARGE GROUPS

Astronaut Life: A powerpoint on astronaut food and the difficulties of life in space, and hands-on activities.

GREAT FOR
LARGE GROUPS

Space Art: Students create a modern art Planet Painting, make a Fractal Pattern Key Chain, Alien Creature, or Planet Mobile.

Careers in Science: Complete a problem-solving activity and learn about the work of scientists and engineers and some of the NASA spinoffs they have created.

Age Appropriate for **7+** modules listed above, plus:

Newton's Law: Activities demonstrating Newton's laws, including design and construction of Marble Roller Coasters.

GREAT FOR
LARGE GROUPS

Planets: Activities on planet distance, size, and characteristics such as Pacing the Planets, Planet Cards, Planet Volume & Mass and Planet Models.

Stories in the Sky: An overview of constellations from multiple cultural perspectives, followed by activities such as pinhole planetariums and "create your own" constellation and accompanying legend.

Other

Pick your own topic: Do you have a topic you would like us to teach about? We have many other potential modules on topics such as magnetism, engineering or solar energy.



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Science Modules

MAINE STANDARDS ADDRESSED



Pre-K-2

Module

Rockets
Planets
Rockets
Careers in Science
Communication
Stories

Standard

Models
Scale
Skills of Technical Design
Understandings about Science and Technology
21st Century Skills/Guiding Principle
The Universe

Gr. 3-5

Module

Rockets
ISS
Model Mars
Planets
Rockets
Newton's Law
Careers in Science
Careers in Science
Planets
Bernoulli's Principle
Newton's Law
Communication

Standard

Models
Models
Models
Scale
Skills of Technical Design
Skills of Technical Design
Understandings about Science and Technology
Science, Technology, and Society
Universe and Solar System
Force and Motion
Force and Motion
21st Century Skills/Guiding Principle

Gr. 6-8

Module

Rockets
ISS
Model Mars
Earth Systems from Space
Planets
Rockets
Newton's Law
Careers in Science
Careers in Science
Planets
Earth Systems from Space
Bernoulli's Principle
Electromagnetic Spectrum
Bernoulli's Principle
Communication
Stories
Engineering
Engineering
Engineering

Standard

Models
Models
Models
Consistency and Change
Scale
Skills of Technical Design
Skills of Technical Design
Understandings about Science and Technology
Science, Technology, and Society
Universe and Solar System
Earth
Force and Motion
Force and Motion
Force and Motion
21st Century Skills/Guiding Principle
The Universe
Problem-Based Learning
Scientific Reasoning
Communication