

# CIESE Professional Development

## 2008/2009 Workshops

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Institute of Technology

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## *In-district Workshops • Workshops at Stevens*

The Center for Innovation in Engineering and Science Education's (CIESE) mission is to catalyze and support excellence in teaching and learning of science, technology, engineering, mathematics (STEM) and other core subjects through innovative, research-based instructional strategies and use of novel technologies. For over 20 years, CIESE has collaborated with teachers, administrators, schools and school districts in long-term, systemic programs that emphasize high quality, standards-based, technology integrated curriculum materials and administrative counsel.

### **In-District Workshops**

In-district training is available for any of the workshops listed in this catalog. Workshops can be grade level and/or subject-area specific, and can be customized to suit specific needs and times.

The cost of in-district professional development is shown below and includes up to 20 workshop participants. Curricula costs vary depending on the training desired.

- Full day workshop cost: \$1200 + Curricula Cost
- Half day workshop cost: \$750 + Curricula Costs
- Long-Term, Systemic Programs: Cost based on level of training and mentoring needed.

Thanks to a grant from Verizon Communications, all **K-12 engineering** workshops are offered at no cost or at a nominal fee (to cover the cost of hospitality and materials) to those organizations that have 10 or more workshop participants until **December 31, 2008**. The workshop fee of \$1200 a day is waived! In the table of contents, the K-12 engineering sessions have a ✓ next to their titles.

**FREE or Nominal Fee  
K-12 Engineering  
Workshops until  
December 31, 2008**

**Workshops at Stevens in Hoboken, NJ and Partner locations across the state:**  
2008/2009 Professional Development Schedule: [www.stevens.edu/ciese/pd.html](http://www.stevens.edu/ciese/pd.html)

**Professional development hours** are awarded based on actual instructional time.

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✓ Workshops with this symbol are considered K-12 engineering workshops and are offered at no cost or at a nominal fee until December 31, 2008 thanks to a grant from Verizon Communications.

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# Elementary Teacher Workshops

## Science & Engineering Connections Series

These workshops feature lessons that integrate applied science content within an engineering context relevant to the lives of youth. Each workshop will include some exploration of key science concepts as well as engineering lessons from the [Engineering is Elementary](#) (EiE) curriculum developed by the Museum of Science, Boston where the science concepts are applied through an engineering design challenge. EiE is standards-based, research-based, classroom-tested curriculum that aligns with many national science curricula, including FOSS, STC, GEMS, and Insights. Teacher Guides for the EiE units will be given out to all participants. It includes: Lesson Plans, Story Book, and Evaluations.

### ● Weather

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Science Topics: **Weather**

NJCCC Science Standards: **5.1, 5.4, 5.8B**

#### **Catching the Wind: Designing Wind Mills (Mechanical Engineering)**

This unit guides students to learn about wind and the ways engineers design machines to capture wind energy. Students explore different materials and shapes conducive to catching the wind. For the design activity, students create their own windmills that can lift a small weight.

### ● Electricity

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Science Topics: **Series Circuit, Parallel Circuit, Insulators, Conductors**

NJCCC Science Standards: **5.1, 5.4, 5.7B**

#### **An Alarming Idea: Designing Alarm Circuits (Electrical Engineering)**

This unit helps students to apply their knowledge of electricity, circuits, conductors, and insulators as they design and construct their own alarm circuits. The science concepts of electricity/energy transfer, conductors and insulators, and complete and incomplete circuits are reinforced; students are also introduced to schematic diagrams.

### ● Water

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Science Topics: **Properties of Water, Separation Techniques, Water Cycle, and Environmental**

## Topics

NJCCC Science Standards: **5.1, 5.4, 5.6, 5.8B**

### **Water, Water, Everywhere: Designing Water Filters (Environmental Engineering)**

This unit addresses the increasingly important issue of water quality through lessons that teach students about water contamination and the ways that people ensure the quality of their drinking water. Students plan, construct, test, and improve their own water filters.

## ● Life Cycles

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Science Topics: **Animal Classification, Introduction to Taxonomy, and Life Cycles of Animals and Plants**

NJCCC Science Standards: **5.1, 5.4, 5.5**

### **The Best of Bugs: Designing Hand Pollinators (Agricultural Engineering)**

This unit helps students connect their knowledge of insects and plants to a broader understanding of the natural system of pollination. Science concepts about insects, life cycles, pollination, and natural systems are introduced and reinforced, and different aspects of agricultural engineering are explored. For the design challenge, students design and improve hand pollinators to work with different model flowers.

## ● Forces

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Science Topics: **Forces, Balancing Forces, and Different Bridge Types**

NJCCC Science Standards: **5.1, 5.4, 5.7A**

### **To Get to the Other Side: Designing Bridges (Civil Engineering)**

In this unit, students explore why bridges are shaped differently. Students distinguish between beam, arch, and suspension bridges and learn how bridge designs counteract and redirect forces and motion. In the culminating design challenge, students design, construct, and test their own bridges.

## ● Simple Machines

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Science Topics: **Simple Machines, Work, and Forces**

NJCCC Science Standards: **5.1, 5.4, 5.7A**

### **Marvelous Machines: Making Work Easier**



### **(Industrial Engineering)**

This unit guides students to learn about how factories use processes, systems, and machines to help make work easier and safer for workers. During the culminating design challenge, students will combine a series of simple machines to complete the various tasks of a model potato chip factory and make work easier.

## **• Sound**

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Science Topics: **Waves, Frequency, Vibration, and Energy Transformations**

NJCCC Science Standards: **5.1, 5.4, 5.7B**

### **Sounds Like Fun: Seeing Animal Sounds**

#### **(Acoustical Engineering)**

This unit brings new levels of excitement and depth to traditional sound units, reinforcing basic concepts while introducing students to the field of acoustical engineering. Students will investigate ways to damp sound, and then will focus on developing a visualization of sound in a way that captures its key elements and communicates the sound clearly to others.

## **• Animal Adaptations**

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Science Topics: **Animal Adaptations, Animal Life Stages, and Habitats**

NJCCC Science Standards: **5.1, 5.4, 5.5, 5.10**

### **Just Passing Through: Designing Model Membranes**

#### **(Bioengineering)**

This unit provides students with the opportunity to apply their knowledge of organisms and their basic needs through a series of activities related to the diverse field of bioengineering. Students are challenged to be bioengineers and design a model membrane that can deliver water to an imaginary pet frog in a controlled manner, helping the frog to meet one of its basic needs.

## **• Designing an Engineering Lesson**

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Learn how to create an exciting engineering lesson using the engineering design process to foster creativity, problem solving and teamwork in your class while reinforcing science concepts. Bring some of your favorite science lessons and leave the workshop with ideas for new engineering design challenges for your students.

## Science & Technology Connections Series

CIESE sponsors and designs interdisciplinary projects that teachers throughout the world can use to enhance their curriculum through unique and compelling uses of the Internet. We focus on projects that utilize [real time data](#) available from the Internet, and [telecollaborative projects](#) that utilize the Internet's potential to reach peers and experts around the world.

### ● **Introduction to Global Telecollaboration and Real-Time Data**

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Science Topics: **Life Science, Earth Science and Environmental Science**

NJCCC Science Standards: **5.1, 5.5, 5.8, 5.10**

Learn about free Internet-based projects that can be used to enhance the K-5 science curriculum. Explore CIESE sponsored and designed interdisciplinary projects such as [Wonderful World of Weather](#), [Square of Life](#) and [Bucket Buddies](#). In addition, other projects and resources will be recommended. All CIESE projects are standards based and have a language arts/literacy component, including suggestions for using children's literature to introduce or reinforce science concepts.



## Middle School Teacher Workshops

### Design Squad As Built on TV

Unleash your students' ingenuity and get them thinking like engineers with [Design Squad](#) challenges. Design Squad, a PBS TV series, is one of the few places on TV where kids can learn about engineering. Viewers see Design Squad teams take raw materials and with very little adult intervention, transform them into workable solutions. As a resource for educators, PBS developed the Design Squad Educator's Guide which can be downloaded for free from the Internet. The guide has four units, divided into 10 engaging, hands-on challenges that emphasize teamwork and creative problem solving. Join us as we explore these units in depth.

#### ● It's Electric

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Science Topics: **Inquiry and Problem Solving, Technological Design, Electricity, and Energy Transformations.**

NJCCC Science Standards: **5.1, 5.4, 5.7**

Participants will design and wire up two devices and put them through some rigorous (and fun) testing. Clips from a related TV episode, *Bodies Electric*, will be shown.

#### ● Cars, Cars, Cars

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Science Topics: **Inquiry and Problem Solving, Data Analysis, Technological Design, Motion and Forces, and Energy Transformation.**

NJCCC Science Standards: **5.1, 5.3, 5.4, 5.7**

Participants will design and build three cars, using the design process to turn their ideas into reality. Clips from a related TV episode, *The Need for Speed*, will be shown.

#### ● Blowin' in the Wind

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Science Topics: **Inquiry and Problem Solving, Technological Design, Motion and Forces, and Energy Transformation.**

NJCCC Science Standards: **5.1, 5.4, 5.7**

Participants will design and build two tall towers and discover what makes structures strong and stable. Clips from a related TV episode, *Blowin' in the Wind*, will be shown.

## • Kick Start

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Science Topics: **Inquiry and Problem Solving, Technological Design, Motion and Forces, and Energy Transformation.**

NJCCC Science Standards: **5.1, 5.4, 5.7**

Participants will design and build two machines that can reliably carry out some challenging tasks. Clips from a related TV episode, *Just for Kicks*, will be shown.

## *A World In Motion (AWIM) Series*

A [\*World In Motion\*](#), developed by the Society of Automotive Engineers Foundation, brings math and science principles to life for middle school students through highly interactive and innovative learning experiences that incorporate the laws of physics, motion, flight, and electronics. Each of the AWIM Challenges is designed around current math, science, and technology standards. Attendees qualify for one free classroom set of materials.

## • Motorized Toy Car

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Science Topics: **Forces, friction, gears and simple machines**

Math Topics: **Fractions, proportions and ratios**

NJCCC Science & Math Standards: **5.1, 5.3AD, 5.4, 5.7A, 4.1AB, 4.3C, 4.5ABC**

Participants design, build and test an electric gear-driven toy car based on a request from a toy company. This lesson involves writing proposals, drawing sketches, and working with models to develop a plan to meet the specific criteria. Attendees qualify for one free classroom set of materials.

## • Gliders

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Science Topics: **Forces, center of gravity, air resistance**

Math Topics: **Data analysis and variable manipulation**

NJCCC Science & Math Standards: **5.1, 5.3AD, 5.4, 5.7A, 4.1AB, 4.3C, 4.4A, 4.5ABC**

Participants design, build and test gliders. The relationship between force and motion and the effects of weight on a glider will be explored. Attendees qualify for one free classroom set of materials.

## • Skimmer & Jet Toy

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Science Topics: **Forces, friction, surface area, air resistance, thrust**

Math Topics: **Mean, area, and ratios**

NJCCC Science & Math Standards: **5.1, 5.3AD, 5.4, 5.7A, 4.1AB, 4.3C, 4.4A, 4.5ABC**

Participants design, build and test a skimmer and a jet toy. The skimmer challenge involves designing paper sailboats and testing the effect of different sail shapes, sizes, and construction methods to meet specific performance criteria. The jet toy challenge involves designing a balloon-powered toy car that also meets specific performance criteria. Attendees qualify for one free classroom set of materials.

## Building Math Series

*Building Math* is an innovative modular curriculum developed by the Museum of Science, Boston and Tufts University for grades 6-8 mathematics studies that integrates math concepts, algebraic reasoning and engineering through an engineering design challenge in a realistic story context. Teacher Guides will be given out to all participants

## • Stranded

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Math Topics: **Numbers and Operations, Measurement, Algebra, Geometry, Data Analysis, Problem Solving, Communication**

NJCCC Math Standards: **4.1AB, 4.2ADE, 4.3AC, 4.4A, 4.5ABC**

Participants will take a journey of a lifetime battling to survive on a deserted island after a plane crash. This workshop will cover three design challenges:

- **A Storm is Approaching:** Design a shelter to protect you and your team from a storm.
- **We Need Water:** Design a water collector with enough capacity for you and your team.
- **Balancing Act:** Designing a loading plan that can keep people and objects balancing in a canoe.

## • Everest

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Math Topics: **Numbers and Operations, Measurement, Algebra, Data Analysis, Connections, Communication**

NJCCC Math Standards: **4.1AB, 4.2DE, 4.3BC, 4.4A, 4.5CDEF**

Participants will join a project adventure team on the trek of a lifetime, battling extreme climate conditions, as they journey to the top of the world. This workshop will cover three design

challenges:

- **Gearing Up:** Design a coat to protect your team from Everest's year-round harsh, frigid weather conditions.
- **Crevasse Crisis:** Design a light-weight bridge to safely cross a dangerous ice crevasse.
- **Sliding Down:** Design an emergency zip-line transportation system to safely and quickly bring your sick teammates down the mountain.

## • Jungle

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Math Topics: **Numbers and Operations, Measurement, Geometry, Algebra, Probability, Data Analysis, Connections, Communication**

NJCCC Math Standards: **4.1AB, 4.2ADE, 4.3ABC, 4.4AB, 4.5BCE**

Participants will join a community service team on a mission to the Amazon Rainforest to investigate, and hopefully solve, the problems of the indigenous people group known as the Yanomami. This workshop will cover three design challenges:

- **Malaria Meltdown:** Design a medicine carrier that can safely transport malaria medicine while keep it cool in a tropical climate.
- **Mercury Rising:** Design a water filter system to remove mercury from a river.
- **Outbreak:** Design a virus intervention plan to contain the spread of the flu.

## Middle & High School Teacher Workshops

### ProENGINEER Workshops

Pro/ENGINEER Schools Edition software is an engineering computer-aided design (CAD) tool with fully associative capabilities spanning modeling, assemblies, drawings, animations, kinematic analysis and design optimization, renderings and more.

Each teacher trained in ProENGINEER will receive a free perpetual license enabling them to install the software on 300 computers (school and home computers).

#### • ProENGINEER Introductory Workshop

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PTC's Schools Program is developed specifically to introduce middle and high school students to design technology and help them to become better problem solvers, critical thinkers and collaborators. Participants will learn ProENGINEER through multimedia tutorials and project-based activities. After completing the 2-day training workshop, PTC will donate 300 licenses of Pro/ENGINEER Schools Edition 3D design software to each teacher.

#### • ProENGINEER New Skills and Projects for your Classroom

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You have received your FREE Pro Engineer software and have implemented it with your students but now you would like to learn a few more skills and project ideas. Included in this workshop will be two real world learning projects you can use with your students right away. Honing skills from your initial training will be combined with learning new ProE skills including blended, helical and variable sweeps.

### Science and Engineering Connections Series

New engineering lessons were designed as companions to CIESE's award-winning science telecollaborative-based and real time data unique and compelling internet projects.

Each workshop will include an in-depth exploration of a specific Internet-based project in the morning to teach key science concepts and then the afternoon will be dedicated to engineering lessons where the science concepts are then applied through an engineering design challenge.

## ● Earth Science & Engineering Connections- Earthquakes

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Science Topics: **Earthquakes, Volcanoes, Latitude & longitude, Plate tectonics**  
NJCCC Science Standards: 5.1, 5.4BC, 5.8

*[Musical Plates: A Study of Earthquakes and Plate Tectonics](#)* has four core activities that teach students how to access and interpret real-time earthquake and volcano data and how to use the information to solve a real-world problem. Participants will engage in a guided exploration of this project and then investigate how to build a structure to withstand liquefaction. They will also design an earthquake resistant structure.

## ● Physical Science & Engineering Connections I- Properties of Water

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Science Topics: **Properties of Water, Water Quality**  
NJCCC Science Standards: 5.1, 5.4BC, 5.6, 5.8B

In the *[International Boiling Point Project](#)*, students discover which factor in the experiment (room temperature, elevation, volume of water, or heating device) has the greatest influence on boiling point. After conducting the boiling point experiment, students submit their results to a world-wide online database. Then, students analyze all of the data to reach an answer to the question: What causes a pot of water to boil? Participants in this workshop will participate in a hands-on exploration of this experiment and practice analyzing archived data. In addition, participants will design a mechanism to collect and condense the steam from boiling "polluted" water to create pure, clean water.

## ● Physical Science & Engineering Connections II- Distance, Rate, Time

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Science Topics: **Measurements (Time, Distance, and Speed), Longitude, Latitude, and Weather**  
NJCCC Science Standards: 5.1, 5.3A, 5.4BC, 5.7A, 5.8BCD

In this project, *[The Stowaway Adventure: Adventures on the High Seas](#)*, participants use real time data from the Internet to track a real ship at sea, determine its destination and predict when it will arrive. They monitor the weather conditions at sea and predict if rough weather might impact on the ship's arrival time. In addition, participants will design, construct and test a travel bag for their stowaway adventure.

## ● Physical Science & Engineering Connections III- Wave Propagation

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Science Topics: **Weather, Waves**  
NJCCC Science Standards: 5.1, 5.4BC, 5.8BCD

What causes a tsunami? How dangerous is it? How do we find one? Can we predict when and where one will form? Who is most at risk from its effects? What defenses are there against its destructive power? [Tsunami Surge](#) uses real-time data sources from the Internet to help students answer the above questions. It challenges students to think critically and creatively in their efforts to understand, predict, and guard against this powerful force of nature. In addition, students design, construct, and test a simple hand pump to remove water from an area flooded by a tsunami.

## • [Designing an Engineering Lesson](#)

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Learn how to create an exciting engineering lesson using the engineering design process to foster creativity, problem solving and teamwork in your class while reinforcing science concepts. Bring some of your favorite science lessons and leave the workshop with ideas for new engineering design challenges for your students.

## Science & Technology Connections Series

CIESE sponsors and designs interdisciplinary projects that teachers throughout the world can use to enhance their curriculum through compelling uses of the Internet. We focus on projects that utilize [real time data](#) available from the Internet, and [telecollaborative projects](#) that utilize the Internet's potential to reach peers and experts around the world.

## • [Real World Problems in Earth Science](#)

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Science Topics: **Weather, Earth's Motion, Measurement, Earthquakes, Plate Tectonics, Engineering Design**

NJCCC Science Standards: **5.1, 5.3A, 5.4BC, 5.8BCD**

The real time data and collaborative projects that will be introduced in this workshop include:

- [Weather Scope](#) - Study factors that affect weather and climate.
- [Musical Plates: A Study of Earthquakes and Plate Tectonics](#) - Explore the relationship between earthquakes and plate tectonics using real time earthquake data.
- [The Noonday Project: Measuring the Circumference of the Earth](#) - Measure the circumference of the earth using a method that was first used by Eratosthenes over 2000 years ago.



## ● Real World Problems in Life Science & Biology

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Science Topics: **Genetics, Water Quality**

NJCCC Science Standards: **5.1, 5.3BD, 5.4C, 5.5**

The real time data and collaborative projects that will be introduced in this workshop include:

- [\*Genetics Project: Is the Dominant Trait Most Prevalent?\*](#) - Let's ask a lot of people all over the world which traits they have. Then we can analyze the collected data to see if the dominant trait occurs more frequently than the recessive trait.
- [\*Take a Dip: The Water in Our Lives & The Global Water Sampling Project: An Investigation of Water Quality\*](#) - Compare the water quality of your local river, stream, lake or pond with other fresh water sources around the world.

## ● Real World Problems in Physical Science, Physics & Chemistry

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Science Topics: **Properties of Water, Measurements (Time, Distance, and Speed), Vectors**

NJCCC Science Standards: **5.1, 5.3, 5.4BC, 5.6, 5.7A, 5.8BCD**

The real time data and collaborative projects that will be introduced in this workshop include:

- [\*The International Boiling Point Project\*](#) - Discover which factor in the experiment (room temperature, elevation, volume of water, or heating device) has the greatest influence on boiling point.
- [\*The Stowaway Adventure: Adventures on the High Seas\*](#) - Use real time data from the Internet to track a real ship at sea, determine its destination and predict when it will arrive.
- [\*Navigational Vectors\*](#) – Track a real airplane in flight and learn how vectors and trigonometry are used for aviation navigation

## ● Real World Problems in Environmental Science

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Science Topics: **Experimentation and Measurement, Water resources, Air Quality, Pollution**

NJCCC Science Standards: **5.1, 5.3BD, 5.5AB, 5.8, 5.10**

The real time data and collaborative projects that will be introduced in this workshop include:

- [\*Down the Drain: How Much Water Do You Use?\*](#) - Collect data on water usage and determine what you might do to use less water.
- [\*Air Pollution: What's the Solution?\*](#) - Use data and animated maps from the internet and monitor for the presence of ground level ozone.
- [\*Take a Dip: The Water in our Lives & The Global Water Sampling Project: An Investigation of Water Quality\*](#) - Compare the water quality of your local river, stream, lake or pond with other fresh water sources around the world.

## • **Introduction to Global Telecollaboration and Real-Time Data**

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Science Topics: **Life Science, Earth Science, Physical Science and Environmental Science**  
NJCCC Science Standards: **5.1, 5.5, 5.8, 5.10**

Learn about free Internet-based projects that can be used to enhance the 6-12 science curriculum. Explore CIESE sponsored and designed interdisciplinary projects such as [\*Musical Plates: A Study of Earthquakes and Plate Tectonics\*](#), [\*The International Boiling Point Project\*](#), [\*Genetics Project\*](#) and [\*Take a Dip: The Water in Our Lives\*](#). In addition, other Internet-based projects and resources will be recommended.

## High School Teacher Workshops

### *Engineering the Future: Designing the World of the 21<sup>st</sup> Century*

*Engineering the Future* (EtF), developed by the Museum of Science Boston's National Center for Technological Literacy, is a full-year engineering and technology education course designed for students at approximately the 9th grade level. However, it may also be successfully implemented with students in higher grades, depending on their level of experience with engineering and science concepts. The course provides a strong foundation in physics and prepares students to explore the social, historical, and environmental contexts of emerging technologies. Through four projects, students learn about engineering design; manufacturing; cost/benefit analysis; communication and energy systems (fluid, thermal, and electrical). The four projects may be implemented sequentially as in the full-year course or may be implemented as stand-alone units. The course is intended for all students, not solely those pursuing engineering or technical disciplines. A teacher guide, engineering notebook, and text book will be given to all participants.

#### • **Design the World's Best Organizer**

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Science Topics: **Engineering Design Process**  
NJCCC Science Standards: **5.4**

Participants learn how to make engineering drawings of their cell phone designs, conduct marketing surveys to find out what kinds of organizers people would like to purchase, construct models of their organizer concepts, redesign, and build a prototype for testing.

#### • **Design a Building of the Future**

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Science Topics: **Forces, Balance, Energy**  
NJCCC Science Standards: **5.1, 5.4, 5.7A**

Participants learn about the "new urbanization" movements in which city planners, architects, and engineers work together to design structures that serve a variety of functions. Tools of science and mathematics are applied to solving such problems as improving the structural integrity and thermal efficiency of the designed structures.

## ● **Improve a Patented Toy Boat Design**

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Science Topics: **Energy Transfer, Behavior of Compressible Gases and Non-compressible Fluids, Conduction of Thermal Energy**

NJCCC Science Standards: **5.1, 5.4, 5.6A, 5.7**

Participants build a “putt-putt boat” that is powered by a fluid/thermal engine. The design challenge is to apply fundamental concepts of matter and energy to understand how the boat works and then redesign it.

## ● **Power to Innovate**

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Science Topics: **Electricity, Generators, Alternative Energy Sources, Communication Systems**

NJCCC Science Standards: **5.1, 5.4, 5.7**

Participants find out how ammeters and voltmeters work and how to generate an electrical current. The design challenges are to create a scoreboard code, design a mouse detector, a communications system, and a fan control system.

## **Long-term Systemic Professional Development Programs**

CIESE offers a variety of long-term systemic professional development programs focused on science, mathematics, engineering, and literacy that can be customized to meet your district's needs. Training for up to 20 teachers can be provided at your school or district computer lab, or on the Stevens campus. Workshops are grade level and subject-area specific. Any of the long-term systemic programs listed below can be delivered as described or customized to suit specific needs and times.

### **Integrated Science & Engineering Program for Middle School Earth, Life and Physical Science Teachers**

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This 30-hour professional development program strengthens teachers' science content knowledge and pedagogy by preparing them to use online, award-winning curriculum resources developed by CIESE. These NJCCCS-aligned curricula engage students in science inquiry, engineering design and problem-solving through use of Internet-based, real-world data and technological design. Teachers participate in hands-on science investigations and team-based engineering design activities in life, earth, and physical science. Activities reinforce topics measured by the NJ ASK8.

### **Savvy Cyber Teacher® (SCT)**

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This research and standards-based program was initiated through the U.S. Department of Education's Technology Innovation Challenge Grant (1998-2003) in which over 8,000 teachers in Arizona, Florida, and Ohio were trained in a two-tiered turnkey training program in partnership with community colleges. SCT is a 30-hour graduate level professional development program to assist elementary, middle and high school teachers in implementing Internet-based resources that engage students in quantitative, inquiry-based activities in science, mathematics, social studies and language arts. SCT can be implemented on a weekly basis with after-school 3-hr workshops or as an intensive 5-day summer institute held on the campus of Stevens Institute of Technology or a computer lab in your district.

### **Technology in Mathematics Education (TIME)**

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This 18-hour professional development program is targeted to teachers of students in grades 6-8 and capitalizes on the interactive nature of the Internet. With a focus on algebra, pre-algebra, number sense, geometry and trigonometry, lessons are designed to meet the curriculum standards that lead to improved student achievement on the New Jersey Assessment of Skills and Knowledge (NJ ASK) and the Grade Eight Proficiency Assessment (GEPA). Held on the campus of Stevens Institute of Technology, or at your district or school computer lab.

### **K-3 Literacy Institute: Using Technology to Enhance Literacy Instruction**

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This 30-hour professional development program provides teachers, technology coordinators, and library media specialists with the skills and knowledge to use technology effectively to enhance the language arts literacy curriculum for younger students. Participants will be engaged in activities which meet technology and literacy core curriculum content standards while enhancing literacy instruction in the K-3 classroom. This institute can be implemented on a weekly basis with after-school 3-hr workshops or as an intensive 5-day summer institute held on the campus of Stevens Institute of Technology or a computer lab in your district.