

Fab Lab Design and Making Programs

Intro to Fab Lab

Audience: Grade 3–12 teachers

In this interactive full-day workshop, use and explore the technologies that Fab Lab has to offer: 2D and 3D design software, 3D printing, laser cutting, CNC routing, and more. These hands-on projects will help spark ideas for integrating making in the classroom. Plus, you can take your creations back to the classroom.

Cost: \$100

Quadcopter Challenge: Two-Day Workshop

Audience: Grade 6–12 teachers

Get your middle and high school students excited about electronics, soldering, and the engineering design process by teaching them to make and fly their own palm-sized remote-controlled quadcopters! In this two-day immersive workshop, learn step-by-step the process of designing, creating, testing, and redesigning quadcopters using the laser cutter or CNC router. The all-day workshops will wrap up with discussion, reflection, sharing best practices, and classroom strategies. You will leave with a lesson plan, classroom presentation materials, a parts list, and your very own quadcopter.

Cost: \$250 (includes materials)

Making a Makerspace: Two-Day Workshop

Audience: K–12 teachers

For schools that are considering adding a makerspace, this is an important two-day workshop that covers it all.

Day one will include hands-on making activities, an engineering challenge, and discussions. Learn some best practices, tips and tricks from the maker staff at Fab Lab and find answers to your biggest making questions. Day two will dive deeper into digital technologies such as laser cutting, 3D printing, and CNC routing. Discussions will focus on successful strategies for integration of making into your school, curriculum inclusion, choosing and budgeting for equipment, and must-have materials. There will be question-and-answer time with Fab Lab staff, as well as networking time for sharing best practices.

Cost: \$200 (includes materials)

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Early Learner Educator Programs

NEW! On a Roll: Engineering with Blocks and Ramps

Audience: Pre–K teachers

We are surrounded by modern marvels such as bridges, inclines, and mass transportation systems. How can you give your early learners the opportunity to explore the engineering (the “E” in STEM) processes that make building these structures possible? With easily accessible materials, this workshop will re-energize your existing classroom block area, uncovering new methods of engineering engagement. Using resources from National Association for the Education of Young Children and evidence from classroom-tested activities, attendees will collaboratively design a four-week investigation into ramps to complement curriculum units on transportation and neighborhoods.

Cost: \$65

Hello Robo

Audience: Pre–K teachers

Robots provide unseen services every day in the transportation, medical, and manufacturing industries, among others. For today’s Pre-K students, robots will be an even more ubiquitous part of life, providing a variety of new STEM career opportunities. At this workshop, you will learn three important, developmentally appropriate concepts to prepare your young students for an understanding of robots. You’ll also discover hands-on classroom activities you can do right away, even if you don’t have a robot.

Cost: \$65

NEW! Far Out Space Places

Audience: K–3 teachers

Find out how to excite and involve your youngest students in space exploration. Start off with a brand new live theater show in the Buhl Planetarium, *Expedition: Solar System!* Then it’s your turn to be the explorer. Discover hands-on activities that will introduce your early learners to robotic spacecraft, the planets of the solar system, and concepts of gravity and microgravity.

Cost: \$65

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Educator Professional Development

TEACHING EXCELLENCE ACADEMY

STEM professionals practice their engineering design skills at Fab Lab.



Winter/Spring 2017 Semester

CARNEGIE SCIENCE CENTER
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TEACHING EXCELLENCE ACADEMY



Sharpen your STEM pedagogy skills with Carnegie Science Center's Teaching Excellence Academy. The Winter/Spring 2017 Semester offers opportunities for educators in all grade levels, with specific workshops in STEM, early learner education, and the engineering design process.

Act 48 credit and certificate of participation provided upon successful completion of each workshop. Workshops are held at Carnegie Science Center on Pittsburgh's North Shore.

Visit CarnegieScienceCenter.org/TEA for dates and registration. Registration is also available by phone at 412.237.1637.

Prices include free parking.

Any of these workshops can also be delivered on-site at your school.

Call Jason Brown, Senior Director of Science and Education, at 412.237.3399 for date availability and with questions.

K-12 Teacher Programs

Spice Up Your Science

Audience: K–8 teachers

Bring your science lessons to life with hands-on activities exploring topics in biology, ecology, physical science, and engineering. Learn three activities to use in the classroom to spark your students' curiosity. This workshop, designed for non-science specialists, includes time to brainstorm and share experiences relating to your classroom's specific needs.

Cost: \$65

NEW! Dream Big in Engineering

Audience: K–8 teachers

Put the "E" in your STEM by learning practical ways to integrate engineering activities into your classroom. Solving problems while being creative is just the start! At this unique workshop, rotate through three stations involving hands-on learning, integrating engineering into Fab Lab experiences, and exploring other engineering resources. At the conclusion of the workshop, educators are invited to watch the *Dream Big: Engineering Our World* Omnimax movie at no additional cost.

Cost: \$65

Building your PBL Classroom

Audience: K–12 teachers

Inspire and excite your students about STEM through project-based learning in this half-day workshop. Using your expertise and experience, develop STEM projects that directly address real-world problems and require students to be engaged using 21st-century skills. Project resources, group work strategies, and collaborative opportunities will also be available.

Cost: \$65

NEW! Designing your PBL Experience

Audience: K–12 teachers

Bring your team and work on project-based learning (PBL) together while gaining insight from experienced teachers. In this full-day workshop, not only will you learn about PBL but you'll also design a project that integrates multiple content areas into the PBL experience. Experience PBL in action as you take the role of learner in a space-themed design challenge. Project resources, group work strategies, and collaborative opportunities are included.

Cost: \$100

Ask and Answer: Subtle Shifts to Get Your Kids Devising Questions and Generating Conclusions

Audience: K–12 teachers

Transitioning a traditional classroom to one that is more inquiry-focused does not require a total curriculum rewrite or starting over from scratch. These simple classroom strategies turn traditional lessons and exercises into activities driven by student questions and creativity, giving kids the opportunity to practice and develop STEM skills.

Cost: \$65

NEW! Narrative Puzzle Solving

Audience: K–12 teachers

Nearly every teacher has encountered a student who said, "When am I ever going to need this information?" Using simple puzzles and codes embedded within a narrative story, students will become more engaged in the material while having fun. The Narrative Puzzle Solving workshop will provide you with the tools and information needed to create these engaging activities in your classroom.

Cost: \$65

Teaching Content through Games

Audience: K–12 teachers

Learn how to create and use board, card, and other non-digital games in your curriculum. Game creation is a valuable tool for teachers and can be implemented as a student-driven activity as well. You will leave the workshop having created a content-focused game for use in your classroom and with ideas about how to encourage students to create their own games.

Cost: \$65

Smash Jam: Integrating Literacy & Science Using Video

Audience: K–12 teachers

Looking for a classroom project to engage students in a creative way that links the arts and the sciences? Interested in using new media to tap students' verbal, artistic, and science skills? At the Digital Video SMASH JAM Workshop, you'll learn how to lead students through a process of conceptualizing, storyboarding, filming, and editing a video about a specific scientific concept. Team up with other enthusiastic educators to explore the intersections between science and literacy in this full-day workshop.

Cost: \$100