**STEM Resources**

**November 2017**

**Big Picture of STEM, Context, Statistics, News, and Research**

Buck Institute for Education and Project Based Learning (PBL) – <http://www.bie.org/>

 Tutorials, great project plans, handouts, rubrics

Changing the Conversation - [www.engineeringmessages.org](http://www.engineeringmessages.org)

“Engineers are creative problem solvers.”

“Engineers make a world of difference.”

 “Engineering is essential to our health, happiness, and safety.”

 “Engineers help shape the future.”

Change the Equation – [www.changetheequation.org](http://www.changetheequation.org)

 Improving learning in science, technology, engineering, and math

 STEMtistics, Vital Signs, STEMworks database of programs

Engineering Challenges – [www.engineeringchallenges.org](http://www.engineeringchallenges.org)

 14 grand challenges for engineering in the 21st century

 Summary Video 6:27 min

Greatest Engineering Achievements of the 20th Century – [www.greatachievements.org](http://www.greatachievements.org)

National Alliance for Partnership in Equity (NAPE) - <http://www.napequity.org/>

 STEM Equity Pipeline project, with a very active Ohio chapter

 Webinars, facts and figures, and other resources

Ohio Centers of Excellence – [www.ohiohighered.org/coe](http://www.ohiohighered.org/coe)

 Major industries in Ohio, directed by state universities (3 at UD)

 Presentations and fact sheets, good for student (and teacher) research

**National and International Curriculum Resources – Free or Almost Free**

American Chemical Society (ACS) – [www.acs.org](http://www.acs.org)

 Grant opportunities, activities and lesson plans, educator awards

 National Chemistry Week – each October – activities

 Teaching Green Chemistry resources and workshops

 ChemMatters monthly magazine for high school level with a comprehensive

online teachers’ guide to each issue

American Institute of Aeronautics and Astronautics (AIAA) – [www.aiaa.org](http://www.aiaa.org)

 Can get a K12 Educator Associate membership for free

 Classroom grants available by simple application process

American Society of Engineering Education (ASEE) – [www.asee.org](http://www.asee.org)

 Can get a K12 Educator membership for $50 per year

 Most years, they host a one-day K12 Workshop - next one in 2019

 Also publishes eGFI (Engineering, Go For It) magazine approx. every other year.

 Accompanying website - <http://www.egfi-k12.org/> for students and teachers

 Also an e-newsletter for teachers

American Statistical Association – [www.amstat.org](http://www.amstat.org)

 K-12 educational resources, lesson plans, workshops, poster contest, and more

 With four Ohio chapters and Ohio competition

A World in Motion – Society of Automotive Engineers (SAE) International

 <http://awim.sae.org/>

 K-12 curriculum, teacher-administered, industry volunteer-assisted

Biomimicry Institute - <http://biomimicry.net/>

 and Biomimicry Education Network (BEN)

Computer Science Teachers Association (CSTA) - <http://csta.acm.org/>

 Computer Science, Computational Thinking, and other

related curriculum resources

Computer Science Unplugged - <http://csunplugged.org/>

 Computer science activities and lessons to do without a computer!

Family Engineering – Excellent activity guide available at a very low cost, containing activities that use very inexpensive materials - <http://familyscienceandengineering.org/>

Figure This! – [www.figurethis.org](http://www.figurethis.org)

 Math Challenges, intended for family engagement

Institute of Food Technologists (IFT) - <http://www.ift.org/>

 Knowledge Center – Food science lessons, career info, facts, find a food scientist

International Technology and Engineering Educators Association (ITEEA) –

 [www.iteea.org](http://www.iteea.org)

 Technological Literacy Standards

 and Ohio Technology and Engineering Educators Association (OTEA) –

 <http://www.oteea.org/joomla/>

LinkEngineering – <https://www.linkengineering.org/>

 Educator Exchange Community from National Academy of Engineering (NAE)

Mathematics Awareness Month – <http://www.mathaware.org/index.html>

Annually celebrated each April, with a different theme

National Council of Teachers of Mathematics (NCTM) – [www.nctm.org](http://www.nctm.org)

and Ohio Council of Teachers of Mathematics (OCTM) – <http://www.ohioctm.org/>

National Defense Education Program (NDEP) – YouTube Lab TV Online

 LabTV videos (several from WPAFB) and other programs

National Energy Education Development Project (NEED) – <http://need.org/>

National Engineers Week - [www.discovere.org](http://www.discovere.org)

National Environmental Education Week (April) (NEEW) – <http://www.eeweek.org/>

National Science Teachers Association (NSTA) – [www.nsta.org](http://www.nsta.org)

 Many opportunities and resources, including professional development program

Next Generation Science Standards (NGSS) - <http://www.nextgenscience.org/>

Siemens Foundation STEM Programs - <http://www.siemens-foundation.org>

 Webinars, lessons, professional development programs, and more!

Society of Manufacturing Engineers Education Foundation (SME) – <http://www.smeef.org/>

 Annual Manufacturing Day each October, with local Open Houses and field trips

 [www.mfgday.com](http://www.mfgday.com)

Society for Industrial and Applied Mathematics (SIAM) - <http://siam.org/>

 “Math Matters! Apply It!”, “Why Do Math?”, Careers in Math

Society for Optics and Photonics (SPIE) - <http://spie.org/> - Education Outreach Resources

 Free DVDs, great posters, Hands-On Optics lessons, grant opportunities

Teach Engineering – [www.teachengineering.org](http://www.teachengineering.org)

 Activities, Lessons, The Engineering Design Process, Living Labs

Try Computing – [www.trycomputing.org](http://www.trycomputing.org)

Try Engineering – [www.tryengineering.org](http://www.tryengineering.org)

Try Science – [www.teacherstryscience.org](http://www.teacherstryscience.org)

USA Science & Engineering Festival – [www.usasciencefestival.org](http://www.usasciencefestival.org)

 5th Festival to be held April 7-8, 2018 in Washington, D.C.

 It is a huge, tremendous event that takes over the city!

**National and International Curriculum Resources – Not All Free**

Engineering is Elementary – [www.eie.org](http://www.eie.org)

 From the Boston Museum of Science, for grades 1-8

 Each accompanied by a global story, and low-cost common materials

 Engineering is Elementary - for grades 1-5

Engineering Adventures – for grades 3-5

 Engineering Everywhere – for grades 6-8

Engineering by Design (EbD) from ITEEA – <http://www.iteea.org/EbD/ebd.htm>

 For grades K-12

 Curriculum is free to Ohio schools

Engineering Education Service Center (EESC) - http://www.engineeringedu.com/

Project Lead the Way – [www.pltw.org](http://www.pltw.org) and [www.pltwohio.org](http://www.pltwohio.org)

 High school Engineering, Biomedical Science, and Computer Science curricula

 Middle school Gateway curriculum

 Elementary Launch curriculum

**Local and Regional (to Ohio) Resources, many with nationwide presence**

Air Force Association (AFA) – [www.afa.org](http://www.afa.org)

 Local annual spring teacher Saturday workshop

 Nationwide educator grants available

 Local chapter – Wright Memorial Chapter 212

 Contact: Shiela Wallace – swal3754@ameritech.net

American Chemical Society (ACS) – <http://daytonacs.org/>

 Local Dayton section has eager volunteers who’ll come to classrooms, etc.

 Also sponsors a local high school chemistry competition

Center for Chemistry Education at Miami University (CCEMU) - <http://www.ccemu.org/>

 Free resources, activities, workshops…

CJ STEMM – Chaminade Julienne High School – [www.cjeagles.org](http://www.cjeagles.org)

 Summer Programs, Career Exploration programs and more links on our website

Dayton Regional STEM Center – [www.daytonregionalstemcenter.org](http://www.daytonregionalstemcenter.org)

 Curriculum, Teaching Fellows program, and other professional development

 STEM Ed Quality Framework

Made in Dayton Blog - <http://www.madeindaytonblog.com/>

 News about manufacturing in Dayton region and XtremeBots Ohio Robotics Inc.

Maker Faire – partner with many local Faires and Mini Faires around the country,

 including Dayton, Ohio August 5-6, 2017 - <http://makerfaire.com/>

National Manufacturing Day – [www.mfgday.com](http://www.mfgday.com)

 Annual event - Nationwide manufacturing plant open houses and tours,

and events for educators and students. First Friday in October.

Miami Valley Human Resources Association – [www.mvhra.org](http://www.mvhra.org)

Workforce Readiness Committee – classroom speakers, potential student job

shadowing and internships

Montgomery County Material Reuse Facility (MCMRF) –

 <http://www.mcohio.org/departments/solid_waste/material_reuse_facility.php>

Sign up for a school “membership” and you and other teachers at your school

can “shop” for all kinds of great free materials for student projects

Mound Science and Energy Museum – [www.moundmuseum.com](http://www.moundmuseum.com)

 in Miamisburg

National Energy Education Development Project (NEED) – <http://www.need.org/>

Ohio Energy Project – <http://www.ohioenergy.org/>

 Free teacher workshops at which you get tons of free materials and lessons

 Energy Efficiency resources and student kits

 High School Green Teams attend annual Youth Summit, and then facilitate

 annual Energy Fair at UD and events at their own schools.

 Energy Sources Tour and Blitz – free and fun summer professional development

Ohio STEM Learning Network (OSLN) - https://www.osln.org/

Science Educators Council of Ohio (SECO) – <http://www.secoonline.org/>

 Annual conference and sporadic events

Start Engineering - <http://start-engineering.com/>

 Coloring book, Kids’ book, career guide, and psters

STEM Career Lab – [www.stemcareerlab.org](http://www.stemcareerlab.org)

 From ThinkTV Public Television, multimedia career exploration

TechFest – [www.ascdayton.org](http://www.ascdayton.org)

Held annually in February during National Engineers Week at Sinclair

Community College, and similar events held across the country

Wright-Patterson Air Force Base Educational Outreach Office – [www.wpafbstem.com](http://www.wpafbstem.com)

 Wizards of Wright, Science Fair mentors and judges, SEMEDS, job shadowing

robotics leagues, teacher workshops, scholarships, internships