This periodic update from the Minn. Dept. of Education (MDE) is sent to a few email lists, including the Minn. Science Teachers Assn. (MnSTA) and district/organization contacts. We encourage you to forward this to other teachers and science leaders. See MDE contacts at the end of this document.

* indicates an item that was not in the previous edition (May).

**News**

**Chemical Disposal by the University of Minnesota**

The Chemical Safety Day Program is again being offered during the coming spring, summer, and fall months. The program is designed to assist schools and colleges in disposing of unwanted chemicals and hazardous waste from science, art, industrial technology, and maintenance departments. The program comes to the school site for pick-up. Please forward this information to safety officers, science chairs, and principals. The program is operated by the University of Minnesota with help from the Minnesota Department of Education. [Click here](#) for Information on the program.

**Teacher Events and Workshops**

**Composting: Building A Laboratory Worm Home, June 8-11, June 23-25 and July 7-9, Lamberton**

Filled with hands-on learning, this 10-day graduate course at the University of Minnesota - Southwest Research and Outreach Center (SWROC) in Lamberton, MN explores science concepts relevant to agricultural science and helps K-12 teachers better prepare students for science assessments. Teachers learn how to establish a lab and receive all supplies and resources to bring back to their own classrooms. Other benefits that participating teachers receive include CEUs, a stipend, follow-up visits to participants' classrooms, mileage, meals and snacks. Registrations are limited to 24 applicants. For more information visit our website [here](#).
Native Skywatchers Workshops, June 8-9 Fond Du Lac; June 11-12 Roseville (MDE)

The Native Skywatchers Middle School Teacher Workshop is designed for all educators & persons interested in increasing their knowledge of Ojibwe and D(L)akota Star Knowledge. Included in the workshop are multiple hands-on activities so participants will be able to experience the culture and the science in the most authentic and meaningful way possible.

Cost is $75 per person. Registration fees include a notebook, copies of Native Skywatchers curricula CD, Ojibwe & D(L)akota star map for classroom use, and other print materials. Continental breakfasts, snacks, lunches and a traditional meal are also included. For more information and registration, click here.

Summer Institute for Climate Change Education, June 15-17, Apple Valley

The Will Steger Foundation is looking back at 10 Years of Climate Change Education at this year's Summer Institute at the School of Environmental Studies. Engage with hands-on activities from their many climate change resources. Hear for experts in climate science, climate change education, and climate solutions. Learn about how the Will Steger Foundation curriculum supports language arts, social studies and science standards. The keynote speakers are Frank Niepold, climate education coordinator for NOAA, and Will Steger. Click here for more information.

Minnesota Valley History Learning Center Curriculum Training, June 16-17, Lamberton

This two-day training immerses teachers in Minnesota history through the following curriculum themes: Gneiss Rock, Glacial River Warren, Immigration & Settlement, Prairie to Production, and Pioneer Life. The curriculum for these themes is developed to exceed Minnesota Department of Education academic standards in Science and Social Studies. Curriculum is structured for grades 5-9, but is adaptable across all grade levels. Sessions include hands-on trainings with curriculum writers at the University of Minnesota - Southwest Research and Outreach Center (SWROC) in Lamberton, MN. Participating teachers receive CEUs, an honorarium for attending training, lunches, notebooks, lesson plans, and other resources to support classroom implementation of the curriculum themes. For more information visit our website here.

* Minnesota Minerals Education Workshop, June 16-18, Duluth

Sharpen your earth science teaching skills and learn about the geology and resources of northeastern Minnesota. The workshop for K-12 teachers and pre-service teachers includes three days of short courses, field trips and mine tours. Participants will receive a variety of resource materials including rock and mineral samples, lesson plan ideas, posters, maps, videos, and other useful information. This workshop is housed at the University of Minnesota
Duluth. The fee is $40, ($55 after June 1) which covers workshop expenses, meals and field trip transportation. Meeting and registration information is at this link.

**Cyber STEM Training by Homeland Security, June 16-18, St. Paul**
The cyber Innovation Center of the Department of Homeland Security is bringing its nationally-recognized STEM: Explore, Discover, Apply (STEM EDA) professional development workshop to Metropolitan State University. The curricula and training are FREE. This intensive, hands-on professional development workshop is open to middle school teachers throughout Minnesota, and educators from all disciplines are encouraged to attend.

Participating teachers will receive access to no cost STEM EDA curricula, training on how to implement 30+ STEM and cyber-related modules, and exposure to best practices and lessons learned from across the nation. Through collaboration with other educators in the workshop, teachers can explore how the engineering design process provides an innovative way to inspire middle school students. They will also receive educational supplies to support experiential learning in the classroom through hands-on use of technology. For more information regarding the professional development workshop and registration information click here.

**Rivers Institutes featuring Waters to the Sea®**
Hamline University presents FREE, three day field-based professional development opportunities that inspires, educates, and prepares 3rd-8th grade teachers to engage students in STEM disciplines through hands-on, inquiry-based investigations at local watersheds. Two institutes are available this summer:

- St. Croix River Institute, June 22-24, 2015 (Monday-Wednesday)
- Mississippi River Institute, July 27-29, 2015 (Monday-Wednesday)

The Rivers Institutes are designed to increase teachers’ science content knowledge and investigation skills, and help area educators translate their professional experiences into meaningful, engaging classroom investigations. The focus for the institutes is on elementary and middle school classroom teachers, as well as teams of teachers. All educators are welcome to apply. Click here for information and application.

**Biomolecular Structure course, June 22 – 26, NDSU, Fargo**
The target audiences for this course are current or future high school STEM teachers in ND, SD or western Minnesota. This course focuses on providing an analytical understanding of the atomic structure of biomolecules like proteins, nucleic acids and their complex macromolecular assemblies and will provide teachers with tools and resources to teach their students. This is an opportunity for professional development of high school STEM teachers, allowing them to incorporate items listed in the National Science Education Standards in their instruction. The course is FREE for the first 10 participants that register, including tuition plus housing and meals. See course website for details.
Responsible Mining Workshop, June 22-26 or August 10-14, U Wis. – Eau Claire

UW-Eau Claire’s Geology departing is offering two sessions of a week-long responsible mining workshop this summer. The workshop is about responsible mining in Wisconsin and is targeted at middle school and high school science teachers. In the workshop we will explore why Wisconsin has been receiving so much interest in mining – from frac sand to iron ore. We will discuss our mining heritage and look to the future, being sure to look at the issue from multiple perspectives. The workshop will be based out of Eau Claire and will have field trips to an active sand and gravel pit, a frac sand mine, the reclaimed Flambeau mine, an active iron ore mine in Minnesota, and a landfill.

The registration fee is $25, which covers all field trips, lunches, and an overnight stay in a hotel for our two-day trip to an active iron mine in Minnesota. Graduate credit is available for those who are interested in such. For further information contact Lori Snyder.

Mapping the Journey: GIS & Environmental Education, June 29 - July 2, St. Paul

The ‘Mapping the Journey’ workshop will inspire and train you to use spatial thinking and ArcGIS Online to support experiential, place-based, environmental education. As participants, you should finish the workshop with inspiration, skills, confidence, and materials to integrate spatial thinking and ArcGIS Online into your experiential, place-based work with your students—both in the field and in the classroom. To maximize the relevance to teaching, technical and GIS-specific knowledge will be taught in the context of its application to this particular educational approach, although the skills are transferable to other approaches. The workshop will be held June 29 – July 2, 2015 at River’s Edge Academy, St. Paul, MN and there will be a $200 participant stipend offered. Learn more and register soon here.

* Water, Health and the World’s Cities, June 29-July 2, Univ. of Minn.

The Institute for Global Studies at the University of Minnesota encourages educators to explore current issues in international studies and learn strategies for integrating global topics into existing curriculum. Earn 30 CUES and low cost graduate credit by attending Water, Health, and the World’s Cities and tackle questions such as How does the state of our water resources affect environmental health? What can cities do to improve human health by improving their water infrastructure, and how do these challenges differ between the global north and south? Tackle these challenges using case studies with water experts from the University of Minnesota’s Institute on the Environment as well as visiting scholars from Bolivia. More information and registration links at http://igs.cla.umn.edu/outreach/profdev.html or contact Deborah Jane outreach@umn.edu with questions.

* Team Teaching with Mother Nature, July 6-8, Savage

Be inspired this summer with the advanced version of the Jeffers Foundation’s popular professional development training for all K-12 teachers. Three days are jam-packed with multi-disciplinary, hands-on activities to engage and inspire your students. Strategies for successful
outdoor instruction, a focus on academic standards, an emphasis on STEM and opportunities to share ideas with other educators are special features of the workshop.

The workshop provides lunch each day, EcoTime Cards, Weatherguide calendar, Jeffers Journals for your students and CEUs or the purchase of Hamline University credit. For information and registration contact David Grack.

**Mathematics for Energy Problem Solving, July 7-16, Hamline Univ.**

This two credit course is part of Hamline University’s 12 credit Energy Education Certificate. It is designed for teachers of mathematics, science and technical education to become familiar with the solution of real life energy problems, e.g. calculating energy use and sizing solar collectors. Examples will be taken using arithmetic and number theory, algebra, trigonometry, exponentials and logarithms. This is a hybrid course using Blackboard plus contact hours on July 7, 9, 14 and 16, 10 am – 3 pm. For information about the course contact Roger Aiken. To register for SCED-6134-01-54241 go to [this link](#).

**Introduction to Modeling, July 13 – 17, Winona State Univ.**

This week-long workshop will provide a general introduction to Modeling Instruction, a research-based approach to teaching science at the middle and secondary level which is demonstrably effective in promoting students' achievement. It will focus on materials from physics-mechanics curriculum, but is relevant for any secondary science teaching. The instructors are Scott Hovan and Darrell Rahn. The cost is $500 for the week, including lunches. Low cost housing is available. Click here for information and registration. Information about the modeling workshops is available [here](#).

**Ecology & Earth Systems Dynamics for Educators, July 13-17, East Bethel**

An exciting professional development opportunity for teachers of students in grades 7-12 this summer at the University of Minnesota Cedar Creek Ecosystem Science Reserve about 35 miles north of the Twin Cities. *Ecology and Earth System Dynamics for Educators* is a graduate level 3-credit course designed expressly for teachers. This hands-on, field-based course addresses the ecological concepts and experimental protocols required to teach the ecology standards dictated in the Minnesota State Science Standards and the NGSS.

Always a fun time, we work hard, learn and laugh over the five day course. For the final product, students develop a lesson or activity to use in the classroom using information and methods learned in the course. For more information, [click here](#).

**Energy Academy by Kid Wind, July 14 – 17, Minneapolis**

During this four-day academy at the St. Anthony Falls Laboratory, we will focus on concepts of electricity and energy usage, efficiency, wind and solar power development, and the real-world applications of these clean energies. We will bring in experts from the industry, take participants on tours and field trips, and delve into hands-on instruction, experiments, and evaluations. [Click here](#) for details.
ArcGIS Online Summer Workshop, July 20 – 23, Bloomington

Bloomington school district is announcing a four day GIS workshop specifically for K-12 teachers. This workshop will introduce you to ArcGIS Online and the use of GIS data by teachers and students. Teachers will do field work and bring the information back into class and develop maps. Lesson plans will be developed revolving around GIS data and how students can easily use their smartphones, Pads (IOS/Android) or laptops to collect data using their own account under YOUR schools software registration (FREE). Stipends will be provided for all four days to the first 12 teachers that register. The workshop will be held at Oak Grove middle school in Bloomington. For more information and registration, click here.

Biotechnology/Microbiology for Teachers In the Classroom (BioTIC)

July 20-24 & July 27-31, 2015 (two-week program), at Hamline University, St. Paul

The BioTIC Institute brings middle and high school biology teachers up-to-speed on the rapid advancements in biotech research, careers, and issues while providing curriculum enrichment that supports standards related to cell structure, disease, genetics and biotechnology. Four graduate credits, stipend, meals, and housing for those outside the Metro area provided. Application and information click here.

Summer Agriculture Tour, July 27 – 28, Eagan start

Minnesota Agriculture in the Classroom will be offering its 2nd Annual Summer Teacher Tour for K-12 teachers on Monday and Tuesday, July 27-28, 2015. This year’s theme is The Many Faces of Minnesota Agriculture. See, smell, hear, touch and taste the agriculture, food and natural resources that allow for our survival. Identify and acquire free agriculture-focused education resources from a wide variety of sources. Learn more about this unique learning opportunity here. Click here for registration.

Brain U Institute, July 27 – August 7, Minneapolis

The Brain U institute provides Two weeks (80 hours) of instruction and lab/classroom/project time, all BrainU lesson materials printed, tours of working neuroscience labs, access to leading scientists in the field, opportunities to network with other science teachers, etc.

Applications are being accepted now. Click here to apply online. BrainU 101 is primarily geared toward high school level curriculum. Priority for registration will be given to high school science teachers. We are holding 5 seats open for K-8 teachers, who will be admitted on a first come, first serve basis. Please direct any inquiries about registration eligibility to BrainU coordinator Katrina Schleisman at schl0299@umn.edu.
WaterWorks!: A Drinking Water Institute for Educators August 3-5, Columbia Heights

Enrich your water-related curriculum, investigate drinking water quality and chemistry, learn about inquiry-based models for your classroom, and find resources within your community. This FREE three-day, hands-on workshop allows grade 4-10 science teachers to gather information from expert presenters about how safe, reliable drinking water is delivered to your community, as well as drinking water issues facing Minnesota. Meals and resource binder provided. Choose between two graduate credits or stipend. Join the ranks of over 300 teachers that have participated in WaterWorks! throughout Minnesota over the last 14 years. Graduate credits or a stipend are available. Click here for application and information.

ZooMS Institutes 2015, August 10 – 12, 13, Minnesota Zoo

Come discover what it takes to engineer a modern zoo with our Zoo Math and Science (ZooMS) program at the Minnesota Zoo! Explore the zoo with unique behind-the-scenes tours and learn from the experts in many different fields – from animal care and enrichment, to exhibit design and construction, to life support and waste management. In addition to considering the various engineering challenges and solutions present in the zoo setting, participants will examine the ways that animals engineer their own environments as well as ways that humans take design inspiration and cues from the natural world. This is a fast-paced, hands-on, rich zoo experience. Come away with greater comfort with STEM and new ideas about how to easily incorporate STEM concepts into your classroom.

ZooMS 1.0 August 10 – 12
ZooMS 2.0 August 13 – for past participants

Click here for more information and to register.

Integrating Best Practices in Middle School Science, August 18-21, St. Olaf College

Attend interactive sessions that let you explore and practice best practices in middle school science teaching. Work together with other middle school science teachers in your field to develop and refine teaching materials that will help you implement new practices in your teaching about a specific topic or standard.

Groups of teachers from across grade-levels within the same school or district are encouraged to apply. Teachers will receive a $300 stipend as compensation for their time. For teachers who live more than 50 miles from St. Olaf College, we have some funds available to reimburse travel and lodging expenses. Applications received by May 20, 2015 will receive full consideration. Click here for more information and to apply

Summer Science Discovery for Teachers, University of Minn.

Summer Science Discovery offers Minnesota elementary and secondary teachers a chance to spend time in the classroom and in the field with University scientists and faculty, experienced K-12 teachers, and peers.
Earn graduate credit through engaging, hands-on classes in plant sciences, insect ecology, biotechnology and a range of other topics. Best of all, most courses are free and include a stipend—even room and board in some cases. You'll take away lots of great materials to use with your own students. Click here for the program webpage.

**Online Light Course for Elementary and Middle School Teachers**

Laser Classroom, an innovator in light-based education, is launching a free self-paced 5-week online course designed for educators who want to teach children ages 6-14 about the science of light. *Bringing STEM to Light: Teaching about Light and Optics* will train in age-specific curriculum, including a flexible array of hands-on experiment options utilizing Laser Classroom’s Light Blox Kit. Participants will come away with a usable structure to incorporate into their STEM curriculum. Laser Classroom will also post blog and video submissions from course participants who wish to share their real-life stories with other teachers. Click here for information.

**Teacher and School Awards and Opportunities**

* NSTA’s New Science Teacher Academy

Science teachers, who will be entering their second through fifth year of teaching and whose schedule is a minimum of 51 percent middle or high school science, are encouraged to apply. NSTA Fellows receive a comprehensive membership package, online mentoring, and a variety of web-based professional learning activities. Fellows will also receive financial support to attend and participate in NSTA’s 2016 National Conference on Science Education in Nashville.

Fellows will be selected on the basis of several criteria, including showing evidence of a solid science background and displaying a strong interest in growing as a professional science educator. For more information, click here.

**Bethel College STEM Certificate Program**

Bethel University will be launching a STEM Certificate beginning Summer 2015 for elementary teachers. The certificate will include three courses: Exploring STEM Practices (4 Credits meeting from 9:00 AM - 3:00 PM June 15 - 19), Applied STEM in the Classroom (3 Credits meeting October 6 - December 15 with three Saturdays face to face and the remainder on line), and STEM Curriculum and Instruction (3 credits beginning in January fully on line). Classes will be interactive, scaffolding the practices and concepts of STEM across the grade levels, integrating content meaningfully within the standards, and leading to applied action research within the classroom. Courses may be taken as a stand-alone certificate, or applied to the masters in education concentration requirement. Contact Patricia Paulson for more information.
Interested in helping newer teachers with content and instruction?

eMSS, e-Mentoring for Student Success, empowers the next generation of teachers by providing content-focused mentoring through an online technology network. Through eMSS, new and veteran teachers—as well as university educators—collaborate in an interactive community to facilitate the exchange of information, ideas, and experiences in order to advance high-quality instruction for all students. Applications are open to teachers with five or more years of experience.

If you are passionate about education and would like to be a mentor, we would like to hear from you! Submit your application today!

Minnesota Trout Unlimited Education Program

Are you interested in connecting your students with their Minnesota environment? Would you like to enhance the learning of water resources, habitat and aquatic life in your classroom?

Explore how your school/class can take part in a unique pilot-program specially designed to enhance learning and student engagement. Through TU’s year-round grant-funded education program, a select number of schools will be invited to take part in an exciting experience which includes: personal 1 on 1 education specialists; equipment for rearing trout; three off-site field events; materials and training to use to enhance your curriculum standards and STEM initiatives.

We are currently looking for 8-10 metro area schools, grades 5-12, interested in participating in the unique pilot program. Please click here to complete a quick interest survey by May 22. For questions email the program.

University of Minn. Programs for Teachers, Students and Families

K12@U is a University of Minnesota website designed to help students discover opportunities, families find summer camps and exciting spots to visit around the U campuses. It also points preK-12 educators and administrators toward innovative classroom resources and high-quality professional development. Check it out!

The Little Canada STEM Mall

The Little Canada Mall, just northeast of Hwy 36 and Rice Street, has quietly developed into a unique collection of STEM products and services that every teacher, parent and business should know about. Three retail stores, Hub Hobby, BME Lab and Science, and Tech Academy provide an inspiring destination for STEM-minded individuals and groups of all ages.

- **Hub Hobby** boasts of being the Midwest’s largest hobby store and has expanded beyond traditional hobbies to include robotics, radio controlled cars and trucks, UAVs (Unmanned Arial Vehicles aka, drones), and plenty of science and education projects for children of all ages.
- **BME Lab and Science** is your “science geek” store that provides laboratory supplies and services to businesses, schools, and home hobbyists. Link here.
• Tech Academy puts the “fun” into STEM education by providing project-based classes where students work together in small groups to reinforce core academic skills. [Link here]

Student Awards, Competitions and Programs

SPARCS@Mac Daycamp, June 15-19, Macalester College, St. Paul

Girls who will be in grades 9-12 in the fall are invited to a 5-day information technology Day Camp. Engage with college faculty, IT employers and fascinating entrepreneurs. Enjoy beautiful Macalester College in St. Paul where your summer learning and fun intersect! Beginners and experienced techies are welcome.

We invite all who identify as girls and/or young women to participate. Girls from historically underrepresented populations, students of color, and would-be first generation college students are especially encouraged to join us. The cost is $100 for the entire week, with scholarships available. [Click here] for information and registration.

Agriculture Summer Academy, July 20-24, Inver Hills Community College

If you are a student entering 10th, 11th or 12th grade, the Summer Academy at Inver Hills Community College offers the opportunity to spend one week exploring career opportunities in the environmental, food and agricultural sciences. You may plan an urban farm, explore fisheries, animal care, sustainable practices for clean water. PLAY IN THE DIRT!

Certified teachers and content experts will be teaching each session with a focus on college options for various careers. A workshop will be offered to help families navigate those options. Transportation will be provided from St. Paul. Cost is $75. [Click here] for more information.

Pre-College Environmental Studies Program, July 26- Aug 1, Luther College

This in-depth week long experience takes place amid the uniquely beautiful and rare ecosystems of the driftless area of northeast Iowa and southwest Wisconsin. Luther College is recognized as a leader in campus sustainability, and cited as one of the top green colleges in the nation. Advance your knowledge and skills in outdoor recreation, field experience, leadership and research. [Click here] for information.

University on the Prairie, July 28 – 30, Lamberton

This is offered for students entering grades 7-12. The three-day program will explore science-related careers. The Southwest Research and Outreach Center (SWROC) in Lamberton, MN along with SW/WC Service Cooperative, offers this popular program for the ninth year. University of Minnesota faculty from the Twin Cities campus and local professionals will join teachers from our region and SWROC scientists to guide students through hands-on exploration of science in five career areas important to the life and future of southwestern
Minnesota: health science, food science, agriculture & environmental science, engineering, and chemistry.

The program is unique in the state and offers students an opportunity to open doors to many career paths and will perhaps result in a future soil scientist, pharmacist, food safety inspector, or chemist. For more information for students and associate teachers visit our website here.

Other Minnesota Competitions and Programs
Many competitions, out-of-school programs and field trip opportunities are listed in the Reach for the Stars Catalog of Programs and Activities.

MDE Contacts:
- Dawn Cameron, Science Assessment Specialist,
- Jim Wood, Science Assessment Specialist,
- John Olson, Science Content Specialist,
- Doug Paulson, STEM Integration Specialist,
Send submissions for the Science Update to John Olson

Other Minnesota Links:
- Minn. Dept. of Education Science Page
- Minn. Science Teachers Association
- Minn. Frameworks for Science and Mathematics Standards
- Get – STEM Connections between schools and businesses
- Mn-STEM STEM programs and resources for families, schools and community
- Sharing Environmental Education Knowledge environmental education resources
- Minnesota Academy of Science: Science Fair, Science Bowl and other competitions