

PLTW Introduces New STEM Education Course: Global Challenges

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Why STEM?

Course is Designed to Attract New Students to STEM Fields by Introducing Basic Principles of Engineering and Biomedical Sciences; Curriculum Shows Students How Math and Science Apply to Real-World Issues Such as Access to Clean Water, a Sufficient and Safe Food Supply and Adequate Healthcare

Clifton Park, NY – Today, PLTW announced that beginning in Fall 2011, it will offer a new course, Global Challenges. The curriculum, which is intended for ninth graders, is designed to attract more students to science, technology, engineering and math (STEM) by introducing them to the basic principles of engineering and biomedical sciences. The course will show students the real-world relevancy of what they are learning in the classroom by covering issues such as how communities provide access to clean water, ensure sufficient and safe food supply, provide adequate healthcare, and develop environmentally friendly energy sources.

“Some students hear ‘engineering’ or ‘biomedical sciences’ and say to themselves ‘that is not for me,’” said John Lock, CEO of PLTW. “It can be difficult for schools to attract students to STEM classes. With Global Challenges, we’ve designed a course that provides students with the opportunity to get a feel for these fields in the context of the broader challenges facing local, national, and global communities. Students not only see the real-world relevancy of engineering and biomedical sciences, but through the hands-on, project-based curriculum they can get a taste of what can be accomplished by continuing down PLTW’s STEM education path.”

The course begins with an introductory project where students investigate current global challenges in engineering and health and is followed by four units: Water: Study of Access to Clean Drinking Water; Food: Study of Global Hunger and Malnutrition; Health: Study of Global Health/Disease; and Sustainability: Study of Global Use of Resources. At the end of the course, students will design a remediation plan for an area devastated by a natural disaster using the skills learned throughout the course.

Schools may choose to offer Global Challenges as a semester course, implementing two nine-week units, or as a yearlong course, implementing all four units, once development is complete. There is no set unit sequence, as each will be a stand-alone unit. Schools may choose which units to implement in a semester format.

Like all PLTW courses, Global Challenges incorporates national standards for science, technology, mathematics, and English Language Arts, reinforcing material from students’ other courses and helping strengthen mastery of those concepts. The rigorous course also helps students develop a wide variety of skills, including teamwork, critical thinking, problem solving, documentation, and presentation.

While Global Challenges is written for students in ninth grade and is designed as an introductory course at the high school level, each unit of study will also contain optional extension lessons that would allow a teacher to expand upon the topics covered or complete additional projects. Depending on the level of detail covered by the teacher, course material may be modified to a middle school level or scaled up to accommodate 10th – 12th grade students.

A recent survey of teens by Intel finds that American students understand the importance of math and science -- 99 percent of teens believe it is important to be good at those subjects. Yet the survey finds that teens primarily blame a lack of work ethic and discipline as reasons why other countries are ahead of the United States in math and science. In response to the results, Intel suggests that although teens are clearly interested in the subjects, they may need to be “challenged more in the classroom.”

PLTW’s hands-on, project-based STEM education program accomplishes exactly that by igniting the imagination and innovation in students through learning. The program helps students develop the critical thinking and problem-solving skills they need to be successful in today’s 21st century global economy and provides students with a proven path to college and career success in STEM fields. PLTW students use professional design software in the classroom that allows them to imagine, create and build things like robots and cars. Studies have shown that PLTW students are more engaged in learning than their peers and more likely to attend college and major in STEM-related fields than non-PLTW students.

For more information on Global Challenges, visit:
<http://www.pltw.org/program-support/new-global-challenges-course>

About PLTW

Project Lead The Way, Inc., is a national, non-profit organization that is the leading provider of rigorous and innovative STEM education curricular programs used in K-12 schools. The PLTW comprehensive curriculum, which is collaboratively developed by PLTW teachers, university educators, engineering and biomedical professionals, and school administrators, emphasizes critical thinking, creativity, innovation and real-world problem solving. The hands-on, project-based program engages students on multiple levels, exposes them to areas of study that they typically do not pursue, and provides them with a foundation and proven path to college and career success. PLTW began in 1998 in 12 high schools in upstate New York as a program designed to address the shortage of engineering students at the college level and has grown to a network of nearly 4,000 middle and high schools in 50 states and the District of Columbia. More than 350,000 students are expected to take a PLTW course during the coming school year. For more information, visit www.pltw.org.



Southwest Wisconsin *Project Lead the Way*



Winter 2011

STEMposium 2011

Thursday, April 28, 2011
7:00 PM
Belmont Convention Center

Please join the Platteville Rural Project Lead the Way Consortium (Platteville, Southwestern, Cuba City, Highland, Iowa-Grant, Argyle, Prairie du Chien High Schools, Southwest Tech, and CESA 3) to inform students, parents, and the community about the many opportunities available in engineering and technological careers.

Featuring the following:

- Display of Project Lead the Way Projects
- Display of Postsecondary Opportunities
- Display of Local Business and Industry
- Presentations of Academy Students



We are currently looking for postsecondary institutions and area businesses that would like to highlight their programs or employer needs at this important event. We will have tables available for displays, and there will be time for students and parents to speak with employers and schools about the opportunities available in the STEM (Science, Technology, Engineering, and Math) fields.

For further information, please contact:

- Greg Quam, Platteville High School, (608) 342-4024
- Mary Johannesen, CESA 3, (608) 822-3276, Ext. 215
- Julie Pluemer, Southwest Tech (608) 822-2369

Project Lead the Way Expanding in Southwest Wisconsin

Congratulations to the Darlington, Lancaster, Mineral Point and Richland Center School Districts on receiving the Project Lead the Way grant. All of these schools will be implementing Project Lead the Way in their schools during the 2011-12 school year. The Platteville Project Lead the Way Small School Consortium and the Southwest Academy for 21st Century Excellence will be hosting a New School Implementation Workshop on Monday March 28, 2011 at Platteville High School from 6:15 pm to 8:00 pm. Congratulations to our new PLTW Schools!

Project Lead The Way From a Student Perspective

I had Mr. Gillitzer for all my four years of high school. Our school was Project Lead the Way certified my sophomore year. I have always been interested in engineering, so I took both of the Project Lead the Way courses Iowa-Grant offered to us (Introduction to Engineering & Design and Principles of Engineering). At the end of each course, I took the college tests for the credit and I ended up passing them both for 6 college credits at Milwaukee School of Engineering. The first class I took was Intro to Engineering and Design (IED). We learned how to sketch/design, dimension, use Autodesk Inventor, how to make 3D objects and build projects within the Inventor program. The second course I took was Principles of Engineering (POE). In this class we touched on many different projects in different areas such as: mechanisms, physics, energy & power, electricity, structure, and automation & robotics. I also took an independent architecture course with Mr. Gillitzer and learned about building design & structure and how to use Autodesk Rivet where I built a 3-dimensional house. My senior year I also applied for and received the Project Lead the Way Scholarship. I am currently attending UW-Stout for construction management but looking into changing my major to Civil Engineering. The Project Lead the Way courses were great for me. I enjoyed taking them and they gave me the head start of 6 college credits, the opportunity of a scholarship, and steered me in the direction of a career field I know I want to be in.

- Kevin Speth



Winter 2011

UW-P College of Engineering, Mathematics and Science to Host Annual Expo

PLATTEVILLE – The annual University of Wisconsin-Platteville Engineering, Mathematics and Science Expo will take place on Thursday, March 31, 2011 from 9 a.m. to 2 p.m. in the Engineering Hall and Ottensman Hall. Everyone is invited to attend this free event. Last year’s event was attended by over 1000 students.

Each year at the expo, departments, programs, students and organizations throughout the College of EMS present demonstrations and displays to highlight engineering, mathematics and science. Last year’s expo featured over 60 Engineering and Science exhibits and competition from all fields of engineering and science.

Several EMS student organizations, including Platteville FIRST Robotics, were involved with the contests, demonstrations and exhibits. Similar events are planned for this year. A few of the contests may require registration and a minimal entry fee. See the K-12 teachers’, students’ and parents’ page on the expo webpage at www.uwplatt.edu/expo for details.

Anyone wanting more information about the EMS Expo may visit the website at www.uwplatt.edu/expo.



Engineering is Elementary 2011

June 28 & 29, 2011
9:00 a.m. - 2:00 p.m.
Platteville High School
Platteville, Wisconsin



As our society becomes increasingly dependent on engineering and technology, it is imperative that our youngsters understand these fields. To meet this need, educators across the country are working to infuse engineering and technology into classrooms.

Each Engineering is Elementary unit engages students in an exciting design challenge that requires them to apply their knowledge of an elementary school science topic. EiE units also connect to mathematics, language arts, and social studies lessons. EiE units meet National Standards for Technological Literacy and are available at two levels, basic and advanced.

June 28: Level I Training
June 29: Level II Training
Presenter: Stephanie Bernander

For further information, please contact:

- » Greg Quam, Platteville High School, (608) 342-4024
- » Mary Johannesen, CESA #3 (608) 822-3276, x215
- » Julie Pluemer, Southwest Tech (608) 822-2369

Southwest Academy for 21st Century Excellence Student Recognition

Student work and accomplishments will be recognized at the Southwest Academy for 21st Century Excellence end of the year dinner banquet on May 11, 2011 at 6:30 pm at Southwest Technical College. Mr. Mark Schroll from Project Lead the Way will be the keynote, followed by presentations of final projects by Southwest Academy for 21st Century Excellence students. If you would like to attend please contact Greg Quam <quam@platteville.k12.wi.us>, Julie Pluemer <jpluemer@swtc.edu> or Mary Johannesen <mjohannesen@igs.k12.wi.us>



Southwest Wisconsin *Project Lead the Way*



Winter 2011

Southwest Academy for 21st Century Excellence

Project Lead the Way (PLTW) engineering course offerings have been an important part of the high school curriculum in the Platteville Small School Consortium districts over the past five years. Discussions pertaining to the implementation of future course offerings led to the realization that future funding challenges will have a profound impact on plans to expand these offerings. Pursuing an Engineering Academy provides the local educational community with a viable opportunity to deliver this important pre-engineering curriculum to students throughout Southwest Wisconsin despite the funding challenges facing local school systems. Southwest Wisconsin Technical College (Southwest Tech) has partnered with CESA 3 and the Platteville PLTW Small School Consortium to develop the Southwest Academy for 21st Century Excellence. The Academy gives students in Southwest Wisconsin an opportunity to take advantage of advance level pre-engineering classes in a rural setting.

Mission

The mission of the Southwest Academy for 21st Century Excellence is to integrate a broad exposure to the field of science, technology, engineering, and mathematics (STEM) within a balanced high school experience, and prepare those with an aptitude and passion to pursue post-secondary education and careers in STEM-related fields.

Vision

The vision of the Southwest Academy for 21st Century Excellence is to support the engineering and technology needs of Southwest Wisconsin.

Business and Education Summit

The Business and Education Summit provides opportunities for educators to learn how to better prepare students for their

WhyStem

Educators across the country are working to infuse STEM education into their classrooms to prepare students for a society that is increasingly dependent on engineering and technology.

STEMposium

STEMposium is a way to inform students, parents and community about the many opportunities available in engineering and technology careers.

STEMposium Scholarships

Each year at the STEMposium, the Platteville Project Lead the Way Small School Consortium and the Southwest Academy awards scholarships to students who are pursuing a career in a STEM related field.

Southwest Academy for 21st Century Excellence Recognition

Recognition of student work and accomplishments are recognized at the Southwest Academy for 21st Century Excellence end of the year reception held annually at Southwest Wisconsin Technical College in early May.

The Platteville PLTW Small School Consortium and Southwest Academy for 21st Century Excellence offers a two-day training on Engineering is Elementary. The training includes a step-by-step review of the EiE curriculum guide.

Name _____
Organization _____
Address _____
City _____ State _____ Zip _____
Business Phone # _____
_____ \$25.00 _____ \$50.00 _____ \$100.00 _____ \$200.00 _____ \$250.00
_____ Other

Donation is tax deductible.





Southwest Wisconsin *Project Lead the Way*



Winter 2011



June 20-24, 2011
9:00 AM to 3:00 PM
Platteville High School
Technology Classroom

OR

June 27–July 1, 2011
9:00 AM to 3:00 PM
Iowa Grant High School
Technology Classroom

The 4-H Gateway Academy has three instructors certified to teach this day camp: Chuck Smet, Technology Engineering Teacher, Brad Gillitzer, Technology Engineering Teacher, and Denise Huser, 7th Grade Science Teacher. They will provide expert instruction in small group settings. During the week, campers will work together in a fun, exciting environment using leading-edge technologies to sample such disciplines as robotics, aeronautics, and computer design

4-H Gateway Applicants Must Be:

- » Boys or girls entering 6th, 7th, or 8th grade in the fall of 2011.
- » Interested in science, technology, engineering or math careers.
- » Comfortable working in a fast-paced environment.
- » Curious about how things work.
- » Willing to participate in the activities and the field trip.
- » Eager to have fun, learn something new, and make new friends.

The 4-H Gateway Academy Offers:

- » Fun and challenging hands-on, high tech projects
- » Valuable teamwork experience
- » Real-world views of engineering and technical careers
- » Recreational opportunities
- » Friendships with students who have similar interests

The summer program is specifically designed by the Society of Manufacturing Engineers — Education Foundation and 4-H to help middle school students explore careers in science, technology, engineering and math. For those students entering high school, now is the ideal time to start on the path toward a profession in technical careers. The Bureau of Labor Statistics projects the demand for engineers to increase by 160,000 or 11 percent from 2006-2016.



Winter 2011

What Evidence Supports the Effectiveness of PLTW?

PLTW Encourages Students to Pursue STEM Careers- Of the more than 69,000 PLTW students who participated in a third-party survey prepared by True Outcomes (“Report on the Third Year of Implementation of the True Outcomes Assessment System for Project Lead the Way, October 1, 2007,” <http://www.pltw.org/Assessment-Evaluation/True-Outcomes.cfm>):

- 90% of 443 high school seniors in the sample cohort indicated that PLTW courses helped them decide on a college major and career field to pursue.
- 80% of these seniors indicated that their primary area of study after high school will be in engineering, technology, or computer science.

PLTW Reaches Students of All Backgrounds- Because PLTW is offered across all socioeconomic levels, it has been effective in reaching traditionally underrepresented demographic groups as documented by the same True Outcomes evaluation mentioned above.

PLTW Increases Student Aptitude and Retention- Observations by independent entities have shown that PLTW increases student aptitude in STEM fields and increases retention rates in college engineering programs:

- In 2008, 65-70% of incoming freshmen at the Milwaukee School of Engineering stayed with their declared major while 90% of the Milwaukee Schools of Engineering’s PLTW students remained in their declared major.
- Research by the Southern Regional Education Board has found that PLTW students achieve significantly higher scores in math and science on the National Assessment of Educational Progress assessment.
- The proportion of female PLTW students reflects the national proportion of female students attracted to college engineering programs (17%). Male and female achievement levels on end-of-course exams are equal in all courses.

Why STEM?

STEM Education is Vital- to the continued prosperity of Wisconsin and the nation. It is projected that 70 percent of all jobs in the United States will require skills in science, technology, engineering, and math.

What is PLTW?

Project Lead the Way (PLTW) is “Best Practice”- Its rigorous, standards-based, project-focused curriculum helps to build the 21st-century STEM workforce pipeline.

PLTW is for All Students- 161 urban, suburban, and rural schools have successfully implemented the program, providing more than 20,000 Wisconsin students in 2008 alone with essential preparation to enter college or careers in fast-growing STEM fields.

PLTW Meets State and National Objectives- Project Lead the Way complements existing Wisconsin initiatives such as Grow Wisconsin, the Wisconsin Covenant, and the Youth Apprenticeship Program, and has been recognized as a premier education program by the Wisconsin Technology Council. Additionally, the program aligns with national and state standards in math, science, and technology.

PLTW is Recognized by Colleges and Universities- Joining others across the nation, Wisconsin’s private universities, technical colleges, the University of Wisconsin System, and the University of Wisconsin Extension and Cooperative Extension recognize Project Lead the Way’s impact and reward student completion with credit or scholarships.

PLTW is a Public/Private Partnership- Public and private partners have joined together with innovative middle and high schools to ensure that Project Lead the Way is growing and sustainable in Wisconsin’s classrooms to benefit our students, teachers and communities.

What is the Southwest Academy for 21st Century Excellence?

Today’s students will read 2,300 web pages and write more than 500 pages of e-mail this year. They will view 1,281 Facebook profiles. They will choose a college major that didn’t exist 10 years ago, and will work in a career that doesn’t exist today solving problems of which we have not yet heard.

How prepared is your son or daughter to enter into this 21st Century work world? Teachers and school districts in Southwest Wisconsin are quickly adapting classrooms and offerings to keep up to the rapidly changing area of technology. Project Lead the Way was previously thought to be possible only in large districts due to cost, teacher training and available students. The PLTW Rural Initiative has found a cost effective way to join forces and offer PLTW in four small districts (Southwestern, Cuba City, Highland and Iowa-Grant) with a slightly larger district (Platteville) as the lead district.

In an effort to offer the PLTW capstone course, Engineering Design and Development (EDD) will be offered as a “hybrid class” taught by Scott Swan, Southwest Tech Mechanical Design Program Instructor. EDD is a research course that requires students to formulate the solution to an open-ended engineering question. With a community mentor and skills gained in their previous courses, students will create written reports on their applications, defend the reports, and submit them to a panel of outside reviewers at the end of the school year.

To become involved in the EDD course, students will:

- Have completed two previous PLTW classes.
- Apply using the SW Academy for 21st Century Excellence application, which is available for their PLTW instructor.
- Attend the EDD class on Wednesdays from 4:00-6:30 p.m. at a location to be determined.

In return, students will receive three advanced standing credits that will apply at SWTC and other post-secondary institutions with similar offerings.