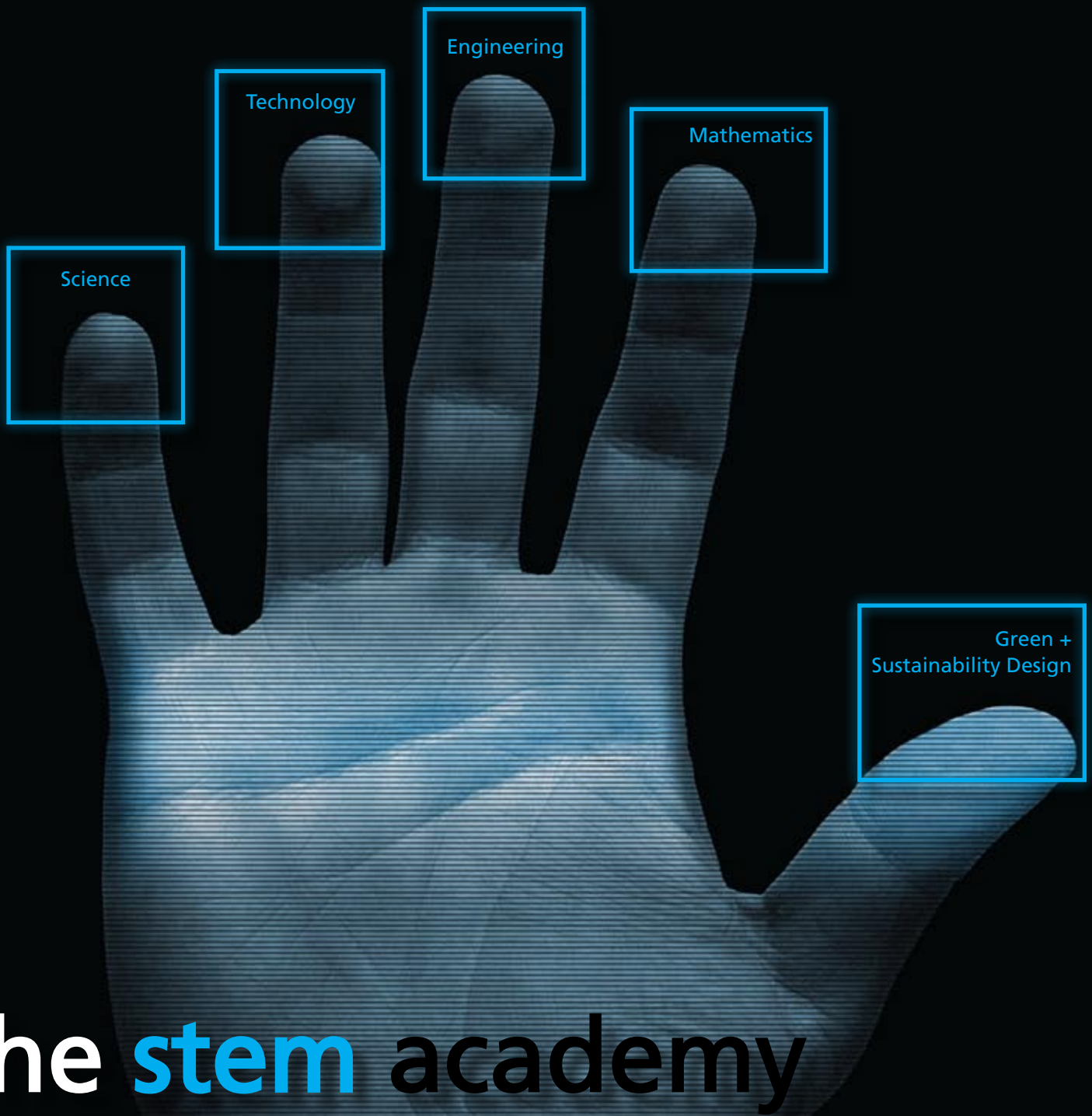
THE CAD ACADEMY PRESENTS



the stem academy

An applied for national not-for profit 501c3 status education program featuring programs for middle school + high school

STEM education program developing engineering pipeline and improving U.S. global competitiveness.
Qualifies for ARRA Race to the Top funds and available for academic integration Summer 2010.

www.stem101.org

Introduction

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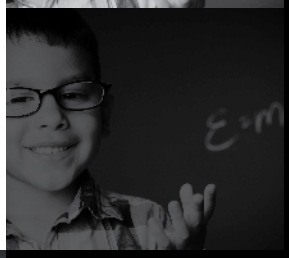

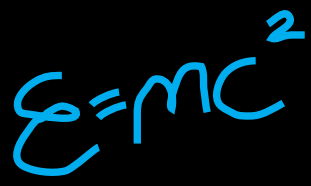

Deliver STEM education with a main line approach and thereby prepare a more diverse group of students for advanced education and the job opportunities of the new design economy as engineers, mathematicians, health care providers, technology experts, scientists, researchers and more in an effort to bolster U.S. competitiveness in a global economy.

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Introduction

Developed by educators for education

The STEM Academy prepares students to be competent, capable citizens in a technology-dependent society through comprehensive student assessments including traditional tests, project based learning presentations and portfolios. This STEM centric program is focused on standard based foundations, gender awareness, socio-economic concerns and general learner needs to engage as many learners as possible. Program develops engineering pipeline by featuring a main line education approach providing STEM education for all students.

The STEM Academy curriculum is standard enough to assure high-quality content exchange and flexible enough to allow for school districts and states to modify to meet their particular needs. Our curriculum culminates with students applying real-world application of their STEM education with hands on activities.

Continuous improvement of course content and research on the impacts of STEM education were governing principles while developing the STEM Academy.

Development Team

The STEM Academy was built by teachers, for teachers. Science, Technology, Engineering and Math teachers worked together with researchers and college level staff to design a comprehensive 6-12 program that is also linked to post secondary educational institutions. Development Team Leader is Dr. Alan Gomez who is currently an Engineering Instructor and CTE coordinator in the Sun Prairie Area School District, and lecturer at the University of Wisconsin in the College of Engineering.

Data driven research component

The STEM academy is focused on the continuous improvement process. Courses in the STEM academy were specifically designed to provide relevant and valid statistical data. This data can be utilized to improve coursework and the student experience as well as provide information to researchers who will examine the learning process in detail.

Dual enrollment, transcripted credit, articulation agreements The STEM Academy has been specifically engaged with post secondary institutions to develop agreements across the nation. These agreements will be completed early in 2010.

www.stem101.org

American Recovery and Reinvestment Act

Overview of The CAD Academy

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Now is the time to bring a high quality, results driven, comprehensive STEM program to your school. The American Recovery and Reinvestment Act (ARRA)—signed into law earlier this year—will provide states with more than $58 billion in education funding before Spring 2010. The STEM Academy meets many of the necessary requirements for this funding. These funds may be employed to implement The STEM Academy.

> *"We will restore science to its rightful place and wield technology's wonders to raise health care's quality and lower its cost. We will harness the sun and the winds and the soil to fuel our cars and run our factories. And we will transform our schools and colleges and universities to meet the demands of a new age. All this we can do. And all this we will do."*
>
> President Barack Obama
> (1/20/09)

Department of Education

recommendations for ARRA fund utilization and how The STEM Academy meets these requirements

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1. Schools secure a high-quality curriculum aligned with state and federal standards which includes student assessment. For two years of ARRA funding the program must include instructor training on effective utilization of the curriculum.

   The STEM Academy features a robust series of twelve courses that engage the mind as well as the hand. STEM based courses are designed around national Science, Technology, Engineering (ABET) and Math Standards. Course materials include: Objectives, Teacher preparation, content outlines, Learning Activities, Case Studies, Resources, PowerPoint's and Online Assessments.

   The STEM Academy instructor training program is designed to improve instructor competency by providing relevant training in flexible formats. To ensure successful implementation of our Academic Programs we offer instructors the option of attending a (1 or 2) week "Certified to Teach" Instructor Training Program.

   Instructors will also online access to a full range of information and resources to make the most of their experience with The STEM Academy. Instructors have access to software quick-starts, curriculum guides, installation procedures and more. Course content is ready to go for the instructor with all lessons, objectives, preparation, career connections, resources, assessments and relevant standards prepared for Monday morning. Student assignments and assessments are graded as they work through them and are automatically entered into an online grade book that is easily transferred into many school based grade book software.

2. Increase student participation in advanced courses and dual enrollment in postsecondary credit-bearing courses and provide professional development for instructors.

   The STEM Academy has been specifically engaged with post secondary institutions to develop agreements across the nation. These agreements will be completed early in 2010.

3. Student assessment which is valid and reliable and can be delivered in a timely manner to assist educators to track student improvement.

   The STEM Academy is focused on the continuous improvement process. Courses in the STEM academy were specifically designed to provide relevant and valid statistical data. This data can be utilized to improve coursework and the student experience as well as provide information to researchers who will examine the learning process in detail. Assessment tool is online and instructors and administrators will be trained on proper utilization.

4. Support teachers with a process whereby they can consult with other teachers on program utilization.

   Subscribe to our STEM Community Portal and receive key tips and tricks from our experts and post questions to be answered by our educator development team as well as fellow educators.

What, Where, Why

The STEM Academy

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What:
The STEM Academy offers a series of courses including discovery based courses at the middle school level, broad mainline education courses in the high school, and specific advanced courses at the high school/college level. The STEM Academy also offers instructor professional development training on site or at regional locations. Follow up sessions are scheduled monthly via webinar for all affiliated schools. Experts in each area of the STEM Academy are also on call to assist instructors with their needs.

Where:
The STEM Academy is designed for easy implementation in all educational settings including but not limited to:

- Public and private k-12 educational institutions
- Post secondary institutions including, community colleges, technical colleges and universities
- Charter schools, public and private
- Online schooling and home schooling
- Private business training facilities
- Camps, clubs and informal educational settings
- Correctional facility education programs

Why:
STEM Education in the United States is woefully inadequate

"In this era we work especially to increase the number, quality and diversity of US engineering graduates and to advance our national capacity for 21st century innovation and global competitiveness. STEM education in the United States is woefully Inadequate for the future of our nation and it is insufficient to produce a robust field of opportunity for our children. Concerns about the nation's innovative capacity in light of our current economic crisis should focus even more attention on the importance on student engagement on STEM subjects. It is the girls and boys in elementary school today who will drive the economic engine tomorrow. If more of our young people are not provide the opportunity to develop interest and skills in these subjects we may not be able sustain our quality of life or address the great challenges of our time".

Charles Vest,
President of National Academy of Engineering (K-12 Conference) 2009

The STEM Academy mission is straightforward. Design an easy to implement series of courses that were linked to standards, satisfied the goals of true "de-siloed" STEM education and all at an affordable price.

High School Program

Overview

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High School Course Overview

A robust series of twelve courses that engage the mind as well as the hand. STEM based courses are designed around national Science, Technology, Engineering (ABET) and Math Standards. Course materials include: Objectives, Teacher preparation, content outlines, Learning Activities, Case Studies, Resources, PowerPoint's and Online Assessments.

Introduction to Engineering

This STEM course is a basic introduction to engineering for all students. Students who complete this course will learn the concepts necessary in order to develop their ideas into solutions that will improve our lives. Exciting hands-on learning activities like data comparison of heart rates, rating consumer products, destructive testing and 3D solid modeling apply math, science, history and English content from other courses in a STEM experience.

This course makes science and mathematics more engaging, interesting, concrete, and relevant. The course's intention and purpose is to educate students in a "main line" method providing STEM education for everyone. While providing a STEM based education for all students, those interested in becoming practicing engineers clearly benefit from this course content.

Engineering Technology

Students build skills for success through, research, experiments, and challenges that incorporate science, technology, engineering, and math (STEM) concepts. Engineering Technology introduces students to a variety of different technologies. They gain experience with using measurement tools and instruments, and perform experiments with electrical circuits, mechanical and fluid systems.

3D Solid Modeling

Learning 3D design is an interactive process. Students learn best when they can explore the practical applications of the concepts that they learn. This STEM course has many activities and exercises that enable students to put design concepts into practice. Students create their ideas such as artificial heart components, extreme sports equipment, hip replacement parts, robotic arm components, musical instruments and their parts as well as many others. Ideas become reality in this course.

General Fabrication Methods

This course is a general introduction to fabrication practices that every student should know and be able to do. Procedures and projects in this course are simple and easy to do for all students. The methods that will be introduced will be applicable to advanced courses in the STEM academy, and everyday home living. Students will become familiar with general tools and building methods that they can utilize when they construct working prototypes and models. Several simple projects will be completed by students while they learn new techniques.

Sustainability Methods

This course is a general introduction to sustainability and renewable energy. Often as individuals we do not understand the impact of simple choices we make every day. This course will attempt to offer insight into these and other decisions we make. Major topics in this STEM based course are food, shelter, water, air, energy, waste, transportation and consumerism. Also included will be a study of the "101 things we all need to know". The investigation of these topics will be at the global, national, local and personal levels.

High School Program

Overview Continues

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Design for Manufacturing

Design for Manufacturing teaches general manufacturing techniques. Calculations and analysis tools are used to design and redesign student's concepts. This course applies and integrates ideas that have been generated in other courses and generates life size models and prototypes. Industry standard software and machinery are used to manufacture student's ideas with verification programs to determine the ability for a plan to be mass produced. Certification will advance students toward continuing education and career opportunities in the fields of engineering, design and machine operation.

Architectural Design

Architecture is more than just walls around us. The form and function of the spaces we live and work in are at the heart of how any design comes to life. This course will investigate how the structure is designed and build as well as the layout of spaces between the walls. Students will be introduced to a variety of concepts including green building and sustainable design in architecture. Students will apply the concepts introduces to a "dream home" that they design and model.

Materials Science

This course appeals to a wide range of students with its unique combination of science, ingenuity, creativity, and exciting hands-on labs.

Material Science uses a multidisciplinary approach to science and technology. Students learn about materials, material uses and applications, scientific theories, and practical experiences that prepare them to work in a technologically-rich environment. The basic principles of physics, chemistry and biology are used in the study of materials.

Foundations in Biotechnology

This STEM based course explores the world of biotechnology including the basics of microbiology, bio-processing, generic engineering, and biotechnology careers as well as examining the role of biotechnology in the medical field. Bioengineering and forensics and food biotechnology are also topics students will explore. This course is a hands-on, experiment based experience that will keep students interested with exciting lab based learning.

Principles of Engineering

This STEM course makes a contribution to the curriculum by providing opportunities for students and teachers to link content together and apply it to solve problems. More and more jobs demand advanced skills, requiring that people be able to learn, reason, think creatively, make decisions, and solve problems. An understanding of science, technology, engineering and math and their methods contribute in an essential way to these skills.

Principles of engineering is a team based advanced course designed for most students. Students who complete this course will engage in real world case studies and learning activities that focus on the engineering process and making the world a better place to live and work in. Students will also investigate the "Grand Challenges" for engineering.

The Principles of Engineering courses intention and purpose is to educate students in a "main line" method providing STEM education for everyone. While providing a STEM based education for all students, those interested in becoming practicing engineers clearly benefit from this course content.

Middle School Program

Overview

The design of this program is focused on standard based foundations, gender awareness, socioeconomic concerns, and general learner needs to entice as many learners as possible. Teachers will find themselves at the center of this curriculum delivery while still being provided plenty of activities, resources, and technological tools to support student and educator creativity. Sound assessment strategies, reference resources, as well as instructional strategies for tools materials and processes exist to deliver this curriculum almost anywhere!

Discovering STEM (6th Grade)

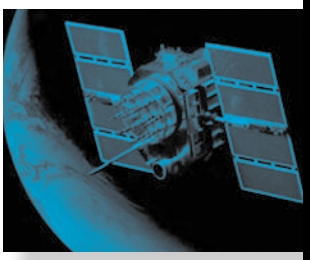
In this course students will be introduced to basic STEM concepts. Students will take part in an activity from each STEM area with two culminating activities that put their STEM skills to the test. Students will enjoy hands-on/minds-on approach to learning about science, technology, engineering, and math. Each activity is designed to give the teacher flexibility of delivery and in material choice.

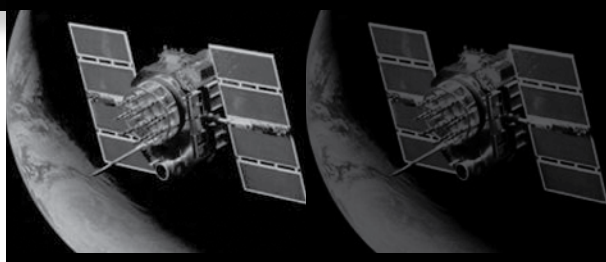
Designing with STEM (7th Grade)

This seventh grade STEM curriculum is packed with all the tools to excite students and instructors alike! Designing with STEM introduces educators and students to the fun and powerful tools of designing and problem solving. The activities and academic applications engage the learner to embrace Science, Math, Engineering, and Technology while they examine each of the integral steps of critical design and problem solving.

Investigating STEM Skills (8th Grade)

The purpose Investigating STEM Skills is integrating the design skills and introductory STEM ideas from the discovering and designing courses. Investigating STEM Skills was designed with an 18 week semester instructional schedule in mind. The activities are intended to highlight the three primary elements of manufacturing: tools, materials and processes





Instructor Training + Resources

Professional Development Training

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Instructor Portal

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Student assignments and assessments are graded as they work through them and are automatically entered into an online grade book that is easily transferred into many school based grade book software.

School Portal

Schools under subscription will qualify to download software and curriculum updates upon release and on demand.

School Portal

Students are able to download our full suite of software titles, software tutorials, build a resume, develop a portfolio and more. In their coursework, students easily use the course website to access content, learning activities, resources and assessments. Coursework is environmentally conscious as student assignments need not be printed as they can be submitted electronically to the course page without an email account. Students are also able to see their progress in real time through online grade books.

Community Portal

Subscribe to our STEM Community Portal and receive key tips and tricks from our experts and post questions to be answered by our educator development team as well as fellow educators.

Partners

with The CAD Academy

Ace Mentor Program of America
features mentoring opportunities for K-12 schools with architects, engineers and construction managers

Bentley Systems
developers of engineering, design, and CAD software for the geoengineering/ GIS, civil, mechanical, plant, and building industries

Blender
is a cross platform suite of tools for 3D creation

Cengage Learning
delivers highly-customized learning solutions for universities, instructors, students

Discovery Channel
featuring Extreme Engineering. A documentary featuring some of the most amazing engineering projects every attempted

Energy Concepts, Inc.
offers real-world technical training systems that provide actual work skills.

Graphisoft
is the maker of ArchiCAD, a 3D architectural design software with sophisticated 2D drawing and layout functions for architects

Great Lakes Press
publisher of Engineering Your Future and other resources for elementary school to college, introducing students to engineering

HAAS Technical Education Center
a network of technical education training centers focused on improving machining performance

Gears Educational Systems
featuring CAD modeling projects

Geometric
is a specialist in the domain of engineering solutions, services and technologies

SolidProfessor
developer of user-friendly computer-based training for SolidWorks

SolidWorks Corp.
developers of 3D CAD design, analysis and product data management software.

Ten80 Education
featuring Engineers, Scientists & Educators combining innovative K-12 educators with STEM

The Home Depot
the world's largest home improvement specialty retailer

To learn more or request a proposal please visit www.stem101.org