



## Resource Guide



## **Overview**

In 2008, the Knoxville Chamber, Tennessee Society of Professional Engineers, Knox County Schools and the Great Schools Partnership launched an internet-based clearinghouse called Vols4STEM to connect educators with science, technology, engineering and mathematics (STEM) professionals and share expertise with students on K-12 STEM programs, competitions and projects relating to their field. These include programs like Future Cities, MathCounts, Lego League, FIRST, Bridge-building, Engineer's Week, Science Fairs, JETS and Science Bowl.

This website ([www.vols4stem.org](http://www.vols4stem.org)) allows prospective volunteers to sign up and offer their help, provides information about ongoing and proposed STEM outreach activities, helps locate other professionals interested in participating in STEM programs, and provides contact information for area schools, clubs, churches, neighborhoods or other settings interested in hosting such activities.

## **Participating Partners**

Current partners of Vols4STEM include the Knoxville Chapter of the Tennessee Society of Professional Engineers (TSPE), the Knoxville Chamber, Knox County Schools and the Great Schools Partnership.

## **Regional K-12 Volunteer Based STEM Outreach Programs**

### **Y-12's Manufacturing Partnership**

Preston Cloud, Coordinator  
865/241-6054  
[cloudpe@y12.doe.gov](mailto:cloudpe@y12.doe.gov)

Y-12 partners with area schools to develop the talent pool for Y-12 and supports local communities. Y-12's partnership shares technical knowledge, industry expertise, supports local curriculum in skilled trades and develops future job opportunities.

### **SKILLS USA**

Don Lawson  
Director, Career, Technical and Adult Education  
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Educational Consultant (College/Postsecondary)  
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SkillsUSA is a partnership of students, teachers and industry representatives working together to ensure America has a skilled work force.

SkillsUSA is a national nonprofit organization serving teachers and high school and college students who are preparing for careers in trade, technical and skilled service occupations, including health occupations. It was formerly known as VICA (Vocational Industrial Clubs of America).

### **Oak Ridge Institute for Science and Education (ORISE)**

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The **Oak Ridge Institute for Science and Education (ORISE)** is a U.S. Department of Energy institute focusing on scientific initiatives to research health risks from occupational hazards, assess environmental cleanup, respond to radiation medical emergencies, support national security and emergency preparedness, and educate the next generation of scientists.

The Oak Ridge Institute for Science and Education (ORISE) manages several unique local and national education activities. These activities foster collaboration and networking while also encouraging faculty members and students to pursue their interests in scientific fields. These programs are conducted in conjunction with ORAU.

### **Oak Ridge Association of Universities**

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PRES-CAB-22

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Oak Ridge Associated Universities (ORAU) is a **consortium of 99 doctoral-granting academic institutions**. ORAU member universities strive to advance scientific research and education by creating mutually beneficial collaborative partnerships involving academia, government, and industry. ORAU is involved in education of K-12 Students through the following programs; **Appalachian Regional Commission/Oak Ridge National Laboratory Summer Institute**: High school educators and students from small, rural towns in Appalachia participate in this annual two-week, residential, hands-on program that focuses on the application of mathematical and scientific principles; **Tennessee Science Bowl**: Students from across the state compete in this annual event sponsored by the U.S. Department of Energy's Oak Ridge Operations Office and other local businesses. The winning team receives an all-expenses-paid trip to compete in the National Science Bowl held in Washington, D.C.; **National Science Bowl®**: In this highly visible educational event and academic competition, teams of high school students attend science seminars and compete in a verbal forum to solve technical problems and answer questions in all branches of science and math. This encourages student involvement in math and science activities, improves awareness of career options in science and technology, and provides an avenue of enrichment and reward for academic science achievement. Also the **Oak Ridge National Laboratory Day of Science**: Each year, students eligible to apply for research participation programs at Oak Ridge National Laboratory are invited to the lab for a day. This gives them a chance to meet the scientists and learn about the research projects that they may apply for through ORAU. **Real World Design Challenge**: The Real World Design Challenge (RWDC) is an annual event that provides high school students, grades 9 – 12, the opportunity to work on real world engineering challenges in a team environment. Each year, student teams will be asked to

address a challenge that confronts one of our nation's leading industries. Students will utilize professional quality computer-aided design software to develop their solutions and will also generate presentations that convincingly demonstrate the value of their solutions. The RWDC provides students with opportunities to apply the lessons of the classroom to the technical problems that are being faced in the workplace.

### **Botball**

AAPT (American Association of Physics Teachers)

Marci Corey

[http://www.botball.org/aboutbotball/contact\\_us.php](http://www.botball.org/aboutbotball/contact_us.php)

405/579-4609

<http://www.botball.org>

Get ready for a high tech, high energy approach to education! The Botball Educational Robotics Program integrates science, technology, engineering, and math with robotics to keep your students on the cutting edge of technology! Following the workshop, students are given about seven weeks to design, build and program a team of mobile, autonomous robots as well as document the engineering process online. Participants compete against each other on a 4' x 8' playing field in a fast paced, non destructive regional tournament. The robots are student built and programmed to maneuver on the game board without the need for remote control.

### **First Lego League**

ASME

Team Support

[Fllteams@usfirst.org](mailto:Fllteams@usfirst.org)

800-871-8326

<http://www.usfirst.org>

FIRST LEGO League (FLL) is an exciting and fun global robotics program that ignites an enthusiasm for discovery, science, and technology in kids ages 9 to 14 (16 outside of the U.S. and Canada). Each year FLL teams embark on an adventurous Challenge based on current, real world issues. Guided by a team coach and assisted by mentors, the kids: 1 Research and solve a real world problem based on the Challenge theme 2 Present their research and solutions 3 Build an autonomous robot using engineering concepts

### **FIRST Robotics**

Team Support

[frcteams@usfirst.org](mailto:frcteams@usfirst.org)

800-897-8326

<http://www.usfirst.org>

FIRST Robotics Competition (FRC) is a unique varsity sport of the mind designed to help high school aged young people discover how interesting and rewarding the life of engineers and researchers can be. The FIRST Robotics Competition challenges teams of young people and their mentors to solve a common problem in a six week timeframe using a standard "kit of parts" and a common set of rules. Teams build robots from the parts and enter them in competitions designed by Dean Kamen, Dr. Woodie Flowers, and a committee of engineers and other professionals. FIRST redefines winning for these students because they are rewarded for excellence in design, demonstrated team spirit, gracious professionalism and maturity, and the ability to overcome obstacles. Scoring the most points is a secondary goal. Winning means building partnerships that last.

### **JETS**

Margaret Heaphy

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703/548-5387

<http://jets.org/>

Since 1950, JETS academic competitions, educational activities, and career guidance resources have been exciting students about careers in engineering and technology. JETS makes engineering real, relevant, and fun by helping students discover engineering for themselves. We provide programs and resources that let students learn about and experience engineering first hand. From exciting student competitions to assessment tools and career exploration materials, JETS helps students plan for rewarding futures by showing them how engineering can help them pursue their dreams. JETS programs touch more than 40,000 students and 10,000 educators from 6,000 high schools across the country every year. JETS participants are a diverse group, more than 1/2 are from groups that are traditionally underrepresented in engineering and technology fields, including 1/3 who are female.

### **Junior FIRST Lego League**

Team Support

[frcteams@usfirst.org](mailto:frcteams@usfirst.org)

800-897-8326

<http://www.usfirst.org>

Junior FIRST LEGO League (JFLL) is a version of FLL for younger children. It is an exciting and fun global robotics program that ignites an enthusiasm for discovery, science, and technology in kids ages 6 to 9.

### **KCHS Robotics**

Bill Kunkel, Mentor

c/o Lewis King

P.O. Box 2425

Knoxville, TN 37901

Part of the FIRST (For Inspiration and Recognition in Science and Technology) the KCHS Robotics team competes annually. All teams compete using a common parts kit, have a six week period for assembly and a common challenge as to what the robot must be capable of performing at the competition. The parts kit does not come with instructions for its design and assembly that is what the students and their mentors must accomplish. Through FIRST \$10 Million of college scholarships are made available to participating students each year. The part's kit is purchased from FIRST for \$6,000. Each year the group must raise \$10,000 which includes the cost of the kit, travel and lodging for the team at competition.

### **MathCounts**

Gregory Reed

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865/974-0437

<http://www.mathcounts.org/>

Since 1983, MATHCOUNTS has been a nationwide math enrichment, coaching and competition program designed to improve math skills among U.S. students. Over 6 million students across the U.S. have participated in the MATHCOUNTS program. Leadership and sponsorship of the local MATHCOUNTS program is provided by members of the Knoxville Chapter of the Tennessee Society of Professional Engineers. MATHCOUNTS' Founding Sponsors are the CNA Foundation, the National Society of Professional Engineers and the National Council of Teachers of Mathematics. National Sponsors also include ADC Foundation, General Motors Foundation, Lockheed Martin, National Aeronautics and Space Administration, Texas Instruments Incorporated and 3M Foundation.

## **National Science Bowl**

Jeff Sherwood

[Jeff.sherwood@hq.doe.gov](mailto:Jeff.sherwood@hq.doe.gov)

202/586-4826

<http://www.scied.science.doe.gov/nsb/index.html>

The U.S. Department of Energy (DOE) National Science Bowl® is a nationwide academic competition that tests students' knowledge in all areas of science. High school and middle school students are quizzed in a fast paced question and answer format similar to Jeopardy. Competing teams from diverse backgrounds are comprised of four students, one alternate, and a teacher who serves as an advisor and coach. DOE launched its National Science Bowl competition in 1991 to encourage high school students to excel in science and math and to pursue careers in those fields. The National Science Bowl's high school competition now involves more than 12,000 students. DOE introduced the National Science Bowl's competition for middle school students in 2002. It now involves more than 5,000 students. The National Science Bowl is the only science competition in the United States sponsored by a federal agency.

## **Odyssey of the Mind**

Allen Ball

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865/661-3488

<http://www.tnodyssey.org/>

Working in teams, Odyssey participants select and spend several months solving one of five new problems designed and distributed each year by Creative Competitions, Inc., the group that sponsors Odyssey of the Mind nationally and internationally. These problems are designed to appeal to students with many different interests. In a given year, team members may choose from such challenges as building vehicles, designing structures that support hundreds of times their own weight, or writing plays based on classical art and literature or characters of their own creation. But whichever problem a team chooses, team members must solve it completely on their own. Every single facet of the team's solution must be designed and executed by the team members themselves. Because of this, the sense of accomplishment that Odyssey teams have when they solve a problem, whether they win at a tournament or not, is tremendously empowering. Additionally, Odyssey of the Mind's emphasis on divergent thinking pushes students to express their ideas and bring them to fruition in an environment which is free of criticism. Odyssey teaches that no answer is wrong, that everyone has something to offer, and that only when team members work together can they solve problems.

## **Science Olympiad**

David Stanislawski

<http://soinc.org/contact/statedir.htm>

423/697-3119

<http://www.soinc.org/>

To bring science to life, to show how science works, to emphasize problem solving aspects of science and the understanding of science concepts. We strive to develop teamwork and cooperative learning strategies among students. To make science education more exciting so more students will enroll in science courses and engage in other science activities like science reading, fairs, meetings and field trips. To promote high levels of achievement and a commitment to excellence, to demonstrate that American students can perform at levels that surpasses expectations of even practicing scientists and engineers. Our goal is to attract more students particularly females and minorities to professional and technical careers in science, technology and science teaching.

## **SME Education Foundation Summer Programs**

SME Education Foundation  
One SME Drive  
P.O. Box 930  
Dearborn, MI 48121  
(313) 425-3300  
[foundation@sme.org](mailto:foundation@sme.org)

<http://www.smeef.org/cgi-bin/smeefhtml.pl?/foundation/youth/steps/academy/locations.htm&&&SEF&>

**Gateway Camp:** Designed for Elementary students using the Society of Automotive Engineers(SAE) “A World In Motion” curriculum. This camp is intended to recruit young students into the math, science and engineering curriculum in middle and high school.

**Gateway Academy:** A week long day camp for 6<sup>th</sup> – 8<sup>th</sup> graders, Gateway Academy is a project based, hands-on curriculum designed by Project Lead The Way® (PLTW) to introduce middle school students to the fundamentals of science, technology, engineering and math in a fun and exciting environment.

**sMe Institute:** The sMe Institute is an upper level high school summer program that is specialized and linked directly to industry. sMe Institutes draw from Project Lead The Way high school students and utilize strong industry involvement.

### **West Point Bridge Design Contest**

[wpbedc@usma.edu](mailto:wpbedc@usma.edu)  
<http://bridgecontest.usma.edu/>

Who is the next great bridge designer? The West Point Bridge Design contest wants to find out by bringing the creative ideas of middle and high school students to life. Using the contest's award winning software, students transform their imagination into reality while putting their problem solving skills into action. Students interested in civil engineering, math, science, and technology get a realistic, hands on introduction to engineering design. Plus, winners earn the glory of national recognition.

### **EnergySolutions Foundation – Scholarship program**

Pearl Wright  
P.O. Box 510583  
Salt Lake City, Utah 84151  
801/649-2286  
801/413-5697  
[pwright@energysolutionsfoundations.org](mailto:pwright@energysolutionsfoundations.org)

The energy solutions scholarship is awarded to students pursuing post-secondary education in the areas of Math, Science or engineering. The scholarships are awarded to tenth grade students who meet the required criteria. The recipients receive a \$2,000 scholarship and are enrolled in a national distinguished award competition for an additional \$25,000, \$5,000 and \$2,500 scholarship. The national distinguished award recipients also receive a new laptop after high school graduation upon entering a bachelor's degree program.

The scholarship criteria are:

- Confirmed enrollment in 10<sup>th</sup> grade at an accredited public high school this academic year.
- Minimum GPA of a 3.5 on a 4.0 grading scale and must maintain a 3.5 GPA while in high school.

- Plans to enter a bachelor's degree program in math, science, or engineering at an accredited university or junior college.
- Active participation and/or leadership in school, work and/or extracurricular activities.

### **America COMPETES Law of 2007**

**The America Creating Opportunities To Meaningfully Promote Excellence In Technology, Education, And Science Act (America COMPETES).** This bill shares the goals of the President's American Competitiveness Initiative (ACI), a comprehensive strategy to keep America the most innovative nation in the world by strengthening our scientific education and research, improving our technological enterprise, attracting the world's best and brightest workers, and providing 21st century job training.

One segment of this legislation that will directly impact K-12 education is the **Adjunct Teacher Corps Program**. This initiative would bring 30,000 math and science professionals to teach in our Nation's classrooms over the next eight years. Another program under this law is the **President's Math Now Proposal To Improve Instruction In Mathematics**. The program will give teachers research-based tools and professional development to improve elementary, and middle school students' achievement in math.

### **Tennessee Governor's Schools for Science and Engineering**

Dr. Jeffrey Kovac  
 Professor of Chemistry  
 Director - Tennessee Governor's Schools for Science and Engineering, Tennessee Science Olympiad State Tournament  
 Department of Chemistry  
 University of Tennessee  
 Knoxville, TN 37996-1600  
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The Governor's Schools were proposed by Governor Lamar Alexander and mandated by the legislature in 1984 to serve the needs of top high school students in the state. Three schools, Sciences, Humanities and Arts, were started in 1985; others have been added in subsequent years. The Governor's School for the Sciences (GSS), has been held at the University of Tennessee, Knoxville, since its inception in 1985. The Governor's School for Engineering began as the Governor's School for Manufacturing Engineering in 1996. The two programs were merged under a single director in 2007.

In 2005 the Governor's Schools were changed from a four-week non-credit format to five-week college-credit programs. Student earn at least six hours of college credit by enrolling in two courses taught by college and university faculty carefully chosen for their ability to work with high school students. In the Governor's School for the Sciences, all students take a core course, The Logic of Science, which teaches the essential deductive and inductive logic skills used by practicing scientists. In addition, students develop better writing skills and learn how to communicate effectively using the World Wide Web. The second course is an elective chosen from biology, chemistry, mathematics and physics. The specific courses vary from year to year depending on the instructor. The Governor's School for Engineering focuses on biomedical engineering. Students learn fundamental engineering design and computer skills in a morning course and are introduced to principles of biomedical engineering in an afternoon session.

The formal academic program is supplemented by a series of evening guest lectures and an extensive social and recreational program. There is no cost to the student other than transportation to and from the site and incidental expenses. The students are regularly enrolled students at the University of Tennessee and have access to all campus facilities and services. The Governor's Schools are financially supported by a contract with the Tennessee Department of Education. Classrooms, laboratories and equipment, and other support are provided

by the Colleges of Arts and Sciences and Engineering and the departments and programs that offer the specific courses.

### **Tennessee Junior Science & Humanities Symposium!**

Dr. Daniel M. Roberts  
Director - Tennessee Junior Science and Humanities Symposium  
Professor - Department of Biochemistry, Cellular and Molecular Biology  
M407 Walters Life Sciences Building  
University of Tennessee  
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The symposium features oral and poster presentations of original research conducted by Tennessee high school students which will be presented to and judged by a panel of scientists from the University of Tennessee Science and Engineering Faculty. Additionally, attending students and teacher mentors will be given the opportunity to visit selected laboratories and interact with research scientists at Oak Ridge National Laboratory and the University of Tennessee who are conducting cutting edge research in Biology, Chemistry, Physics, and Engineering. The symposium culminates with a banquet during which scholarships will be awarded to the top student researchers based on the assessment of the judging panel. In addition, the top three student researchers will be invited to participate in the National JSHS.

### **The University of Tennessee, Math and Science Center (MSC)**

Jennifer Kuhn, Associate Director  
1914 Andy Holt Ave  
25 HPER Building  
Knoxville, TN 37996  
Phone: (865) 974-4466  
Fax: (865) 974-3961

This is a pre-college program that is funded by the U.S. Department of Education for high school students in the 9th, 10th, 11th, and 12th grades. Upward Bound programs have been in existence over 35 years across the country and been at the University of Tennessee since 1991. Upward Bound programs were specifically created to help potential first-generation college students and students from families who meet income guidelines established by the federal government graduate from high school, attend college, and reach their full potential while in college. The program provides tutoring, ACT preparation, college and career information, instruction in academics, cultural enrichment and social counseling on a one-to-one basis with students in the program. It also gives students a chance to experience what college might be like following the 10th and 11th grade through a six week academic program on The University of Tennessee's campus during the summer.

### **The University of Tennessee, Southern Science and Engineering Fair**

Julie Werner, Fair Manager  
2506 EJ Chapman Dr.  
Knoxville, TN 37996-4531  
Phone: (865) 974-5158  
Fax: (865) 974-4514  
Email: [jwerner2@utk.edu](mailto:jwerner2@utk.edu)

The Southern Appalachian Science and Engineering Fair is the premier science competition for students in middle and high school in our 23-county service area of East Tennessee. We have promoted teaching the scientific method in science, engineering, and math since 1952.

The fair is sponsored by the University of Tennessee and Oak Ridge National Laboratory, as well as many local companies and agencies. It is held at the UT Thompson Boling Arena during the first week of April. There are two divisions of competition - Junior Division for middle school students grades 6 - 8, and Senior Division for high school students grades 9 - 12.

SASEF is an official, affiliated regional fair of the International Science and Engineering Fair, and the top two Senior Division students win an expense paid trip to compete in ISEF.

Please contact for dates of the fair.

### **UT Pre-Collegiate Research Scholars Program**

#### Farragut High School Science Department

Ms. Kristin Baksa  
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Farragut High School  
[kbaksa@charter.net](mailto:kbaksa@charter.net)  
(865) 671-7129 (school)

#### Contact for the College of Engineering

Dr. Masood Parang  
Associate Dean  
College of Engineering  
[mparang@utk.edu](mailto:mparang@utk.edu)  
(865) 974-2454

#### Contact for the College of Arts and Sciences

Dr. Lynn Champion  
Director  
Academic Outreach and Communications  
College of Arts and Sciences  
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(865) 974-4676

The College of Arts And Sciences and the College of Engineering at the University of Tennessee, Knoxville are partnering with the Farragut High School Science Academy (Knox County Schools, Tennessee) in a **pilot** program -the UT Pre-Collegiate Research Scholars Program. Farragut High School seniors working under the direction of their high school teacher mentor, Ms. Kristin Baksa, are awarded scholarships to work with faculty mentors in UT research laboratories. The program began in Summer Term 2007 and is continuing throughout the 2008-2009 academic year.

The program's goal is to develop a model for hosting high school students in UT research laboratories so that they may experience the excitement of scientific research and engage in their own original research. The program is currently open only to students of Farragut High School; however, it may be expanded in future years to accommodate participation of students from other schools.

### **Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP)**

UT-TLSAMP

110 Estabrook Hall

Phone: 865-974-1931

Fax: 865-974-0669

E-mail: [tlsamp@utk.edu](mailto:tlsamp@utk.edu)

The goal of the **Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP)** program is to increase the enrollment and graduation rate of underrepresented ethnic minority students (Hispanic, African-American, American-Indian, Alaskan Native, and Pacific Islander) in science, technology, engineering and mathematics (STEM) by at least 100% at the end of the five-year period. The objectives to support the goal of the alliance are to; recruit underrepresented students to pursue science or engineering as a career; improve the quality of the learning environment for underrepresented science and engineering students at all schools; and ensure that a larger number of undergraduate students are prepared to enter graduate programs.

The University of Tennessee is one of six colleges and universities to receive a five year grant from TLSAMP, which represents one of 36 such programs sponsored by the National Science Foundation (NSF).

### **Boys and Girls Clubs – ClubTech Program**

Anna Beth Meccia

Director of Special Projects and Marketing

John D. Lee Administrative Building

220 Carrick Street, Suite 318

Knoxville, TN 37921

Phone: 865-544-3825

Fax: 865-546-8507

Through Club Tech, and thanks to a more than \$100 million donation from Microsoft, BGCA is providing Clubs with the tools to make Club members and staff effective technology users. In 2007, long-time supporter Best Buy Children's Foundation joined forces with BGCA and Microsoft to equip America's youth with essential digital literacy skills.

Clubs receive a comprehensive package of the latest Microsoft products – a combined \$88 million software gift. With another \$12.3 million in cash, BGCA has developed technology programs that will give members basic computer skills; introduce them to digital movie making, music making, photography, graphic design and Web development through Digital Arts Suite and Festivals; and guide staff in using technology to enhance all program offerings. Club Tech also includes extensive technology training opportunities for Club staff at all professional levels.

These initiatives emphasize community mobilization and family involvement as strategies Clubs can use to better serve more young people and broaden the impact of all Club programs.

### **The University of Tennessee GK-12 Earth Project**

Dr. Sally Horn

*Professor, Department of Geography*

304 Burchfiel Geography Building

The University of Tennessee

Knoxville, TN 37996-0925

Phone: (865) 974-2418

Fax: (865) 974-6025

email: [shorn@utk.edu](mailto:shorn@utk.edu)

The objective of this Track I GK–12 project is to bring the excitement of research to rural middle schools in east Tennessee, by linking Earth science instruction with ongoing and new University research on climate and environmental history as reconstructed from natural Earth archives including sediments, soils, tree rings, rocks, and fossils. Graduate students in the Departments of Earth and Planetary Sciences and of Geography who are studying such records of Earth history will serve as GK–12 fellows in 7 schools in 4 districts. Fellows, teachers, and faculty advisors will work together to develop research-based science activities, and new collaborative local research with students, that build on the research of fellows, advisors, and others, and that link to national and state curriculum standards. GK–12 partnerships will be strengthened through workshops, through collaboration in research and in the development and implementation of research-based learning activities, and through professional development activities including summer lab internships and field work opportunities for teachers.

### **UT Pro2Serve Math Contest for Tennessee High School Students**

Tennessee Math Contest  
Department of Mathematics  
1403 Circle Drive  
121 Ayres Hall  
Knoxville, TN 37996-1300  
**Phone:** 865-974-2461  
**email:** [tmc@math.utk.edu](mailto:tmc@math.utk.edu)

UT Pro2Serve Math Contest are individual and team competitions for high school students with preparation in Algebra I & II, and Geometry.

### **ASPIRE (Aspiring Scientists Participating In Research and Education)**

Office of Academic Outreach and Communications  
University of Tennessee, College of Arts and Sciences  
974-4676  
[servlern@utk.edu](mailto:servlern@utk.edu)

Beginning fall term 2008, UT science faculty in the College of Arts and Sciences will have an opportunity to have an **ASPIRE** outreach team associated with their research laboratory. **ASPIRE** outreach teams are comprised of two – four undergraduate students working under the direction and leadership of a graduate student and/or post doc. The **ASPIRE** teams extend the research and discovery of the laboratory to middle school and high school students by creating grade-level appropriate hands-on demonstrations and laboratory experiments which are aligned with the school science curriculum. Team members conduct visits to schools where they provide content enrichment experiences and also serve as positive role models for encouraging middle and high school students to pursue study in science, technology, engineer, and mathematics (STEM) disciplines.

### **Knox News Sentinel's Who are You in the World of Work? – STEM Disciplines Addendum**

Angela Browning  
865-342-6113  
[browninga@knoxnews.com](mailto:browninga@knoxnews.com)

Grades: 5-7 & 8-12

The number and variety of career choices can seem overwhelming to young people. This curriculum is designed to simplify and demystify the process of selecting a career. Many details, such as education requirements and salary ranges, are explored. Area professionals are profiled in the hope that their stories illustrate how hard work, commitment and planning can help young people reach their dreams. Use it to help your students determine, through the exercises, activities and video presentations provided, exactly who in the world of work they are. An addendum to this publication is being developed that speaks specifically to the STEM discipline careers.

### **STEM Education Coalition**

James Brown  
Co-Chair, STEM Education Coalition  
Manager, Policy and Government Affairs  
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[www.acs.org/policy](http://www.acs.org/policy)  
[www.stemedcoalition.org](http://www.stemedcoalition.org)

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Assistant Executive Director, Legislative and Public Affairs  
National Science Teachers Association  
1840 Wilson Blvd.  
Arlington, VA 22201  
(703) 312-9214 (office)  
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[jpeterson@nsta.org](mailto:jpeterson@nsta.org)  
[www.nsta.org](http://www.nsta.org)  
[www.stemedcoalition.org](http://www.stemedcoalition.org)

The STEM Education Coalition is composed of a diverse range of groups who have come together to work aggressively to raise awareness in Congress, the Administration, and other organizations about the critical role that STEM education plays in enabling the U.S. to remain the economic and technological leader of the global marketplace of the 21st century. We also support robust federal investments in basic scientific research to inspire current and future generations of young people to pursue careers in STEM fields.

### **Tennessee 4-H**

Daniel Sarver  
Extension Specialist  
Tennessee 4-H SET (Science, Engineering, and Technology) Liaison  
4-H Youth Development  
University of Tennessee Extension  
205 Morgan Hall  
2621 Morgan Circle  
Knoxville TN 37996-4510  
[dsarver@tennessee.edu](mailto:dsarver@tennessee.edu)  
865-974-7436  
865-974-1628 Fax  
[4h.tennessee.edu](http://4h.tennessee.edu)

4-H, in Tennessee, is the youth development program of the University of Tennessee. Preparing young people to become responsible, capable and involved leaders and citizens of Tennessee and the nation is the goal of the 4-H program. The goal is accomplished by providing educational experiences for young people to gain knowledge, develop life skills, live healthy lives, make intelligent career choices and form positive attitudes—values young people will rely on throughout their lives. Tennessee 4-H, a component of the Cooperative Extension system, delivers programs through cooperative efforts of the University of Tennessee Institute of Agriculture, Tennessee State University, U. S. Department of Agriculture, county governments, and public and private sector volunteers.

Tennessee 4-H offers its members a choice of 26 program areas. 4-H'ers, who join through their local county office, are encouraged to choose a project or projects and build their knowledge of the project subject material. They also complete activities related to the project area, keep records of their activities, give written and oral demonstrations about their projects, and participate in judging and other contests involving their project. 4-H'ers work with parents, volunteers and other 4-H'ers who share similar projects. In many cases, clubs are formed around a project area, such as a county engineering club. Project work not only increases a 4-H'ers knowledge of a particular subject of interest to them, but project work can also prepare them for a career in that field, such as engineering. Scholarships, prizes, awards, and special recognition are also the rewards for project work.

### **Existing Local STEM Societies**

American Association for the Advancement of Science (AAAS)

Website: <http://www.aaas.org/programs/education/SSE/activities/mcps.shtml>

Association for the Advancement of Cost Engineering (AACE) International, East Tennessee Section

Tammi Hodges

P.O. Box 51133, Knoxville, TN 37950-1133

574-5484

Emails: [hodgestr1@y12.doe.gov](mailto:hodgestr1@y12.doe.gov)

Web Site: [www.aace-ets.org](http://www.aace-ets.org)

American Chemical Society (ACS)

East Tennessee Section

Rose Boll

Chem Dept. University of Tennessee,

Knoxville, TN 37996-1600

Phone Al Hazari at 865-974-1065

Email: [RBOLL@utk.edu](mailto:RBOLL@utk.edu)

Web Site: <http://atom.chem.utk.edu/~acs/>

American Council of Engineering Companies (ACEC) of East Tennessee

Mike Stomer

970-0003

Email: [mstomer@smeicnc.com](mailto:mstomer@smeicnc.com)

David Harrell

546-5800

Email: [dtharrell@vaughnmelton.com](mailto:dtharrell@vaughnmelton.com)

Web Site: <http://www.acec.org/>

American Industrial Hygiene Association, TN Valley Section

Don Blackburn

P.O. Box 2008 MS6103, Oak Ridge, TN 37831-6103

576-0502

Email: [blackburndl@ornl.gov](mailto:blackburndl@ornl.gov)

Web Site: [www.tvsaiha.org/](http://www.tvsaiha.org/)

American Institute of Architects (AIA) of East Tennessee  
29 Market Square, #201  
Knoxville, TN 37902  
(865) 637-5003  
Email: [compexec@aiaetn.org](mailto:compexec@aiaetn.org)  
Web Site: <http://www.aiaetn.org/index.html>

American Institute of Chemical Engineers (AIChE), East Tennessee Section  
Timothy Nolen  
Eastman Chemical  
Box 1972  
Kingsport, TN 37662  
(423)229-8287  
Email: [tnolen@eastman.com](mailto:tnolen@eastman.com)  
Web Site: [www.tnengineering.net/AICHE/index.htm](http://www.tnengineering.net/AICHE/index.htm)

American Institute of Chemical Engineers (AIChE), Knoxville-Oak Ridge Section  
Paul Taylor  
ORNL PO Box 2008, Oak Ridge, TN 37831-6243  
574-1965 (w) 470-9536 (h) 574-6872(fax)  
Email: [taylorpa@ornl.gov](mailto:taylorpa@ornl.gov)  
Web Sites: [www.ornl.gov/sci/aiche/](http://www.ornl.gov/sci/aiche/) or [www.aiche.org](http://www.aiche.org)

American Nuclear Society (ANS), Oak Ridge/Knoxville Section  
Dr. Ronald J. Ellis, ORNL  
P.O. Box 2008, 1 Bethel Valley Road, Oak Ridge, TN 37831-6172  
574-6107 (w) 574-9619(fax)  
Email: [ellisrj@ornl.gov](mailto:ellisrj@ornl.gov)  
Web Site: [www.local.ans.org/oakridge/](http://www.local.ans.org/oakridge/)

American Society for Engineering Management (ASEM)  
Tim Hale  
800 Oak Ridge Turnpike Suite A-600, Oak Ridge, TN 37830  
220-4725  
Email: [tim.hale@tetrattech.com](mailto:tim.hale@tetrattech.com)  
Web Site: [www.asem.org](http://www.asem.org)

American Society for Quality (ASQ), Knoxville Section 1105  
Paul Rock  
12512 Pony Express Drive, Knoxville, TN 37922  
671-0356  
Email: [rockqmc@tds.net](mailto:rockqmc@tds.net)  
Web Site: [www.discoveret.org/asq1105/index.htm](http://www.discoveret.org/asq1105/index.htm)

American Society of Agricultural and Biological Engineers, TN Chapter  
Tim Prather, chair  
2506 Chapman Dr, Knoxville, TN 37996-4531  
974-7266(w) 974-4514(fax)  
Email: [tprather@utk.edu](mailto:tprather@utk.edu)  
Web Site: [www.tnasabe.org](http://www.tnasabe.org)

American Society of Civil Engineers (ASCE), Knoxville, TN Branch  
Mary Hensley

204 Old Blacksberry Ln, Clinton, TN 37716  
220-4781  
Email: [asce@discoveret.org](mailto:asce@discoveret.org)  
Web Site: [www.asce.org](http://www.asce.org)

American Society for Heating, Refrigeration and Air Conditioning (ASHRAE), East TN Chapter  
Jeff Gibson  
James M. Pleasants Co.  
(865)584-5007  
Email: [jeffg@jmpco.com](mailto:jeffg@jmpco.com)  
Web Site: [www.etn.ashraregion7.org](http://www.etn.ashraregion7.org)

American Society for Heating, Refrigeration and Air Conditioning (ASHRAE), TN Valley Chapter  
Web Site: [www.tennesseevalley.ashraeregion7.org/](http://www.tennesseevalley.ashraeregion7.org/)

American Society for Mechanical Engineers (ASME), Oak Ridge Section  
Brian Shaw  
3230 Heather Glen Rd, Maryville, TN 37801  
865-567-2422 or 865-233-0808  
Email: [shawb1@asme.org](mailto:shawb1@asme.org)  
Web Site: [sections.asme.org/oakridge/index.htm](http://sections.asme.org/oakridge/index.htm)

American Society for Mechanical Engineers (ASME)  
East Tennessee Section (Knoxville)  
Derek Jamison: [jamisond2@asme.org](mailto:jamisond2@asme.org)  
Web Site: [sections.asme.org/easttennessee/index.htm](http://sections.asme.org/easttennessee/index.htm)

ASM International, Oak Ridge Chapter  
James Hemrick  
P.O. Box 4072, Oak Ridge, TN 37831-4072  
776-0758  
Email: [jhl@ornl.org](mailto:jhl@ornl.org)  
Web Site: [www.discoveret.org/orcasm](http://www.discoveret.org/orcasm)

Association For Facilities Engineering (AFE)  
Tom Irwin  
KUB  
594-7328  
Email: [tirwin@kub.com](mailto:tirwin@kub.com)  
Web Site: [www.afe.org/](http://www.afe.org/)

Association for Women in Science, East TN Chapter  
Suzanne Lenhart  
University of Tennessee Math Department, Knoxville, TN 37996-1300  
974-4270 (h) 974-4270 (org.) 974-6576(fax)  
Email: [lenhart@math.utk.edu](mailto:lenhart@math.utk.edu)  
Web Site: [www.awis.org](http://www.awis.org)

Association for Operations Management (APICS), East TN Chapter  
Chris Duckworth  
University of Tennessee  
(865)719-1016  
Email: [chrisduckworth@ams-development.com](mailto:chrisduckworth@ams-development.com)  
Web Site: [www.apics-knoxville.org/index.htm](http://www.apics-knoxville.org/index.htm)

Building Owners and Manager Association (BOMA), Chattanooga Chapter  
Steve Hunt  
Berry, Hunt & Yarbrough  
(423)756-2507  
Email: [pres@bomachattanooga.org](mailto:pres@bomachattanooga.org)  
Web Site: [www.bomachattanooga.org/](http://www.bomachattanooga.org/)

Building Owners and Manager Association (BOMA), Knoxville Chapter  
Jason Bourgogne  
701 Henley St.  
Knoxville, TN 37902  
(865)251-6007  
Web Site: [www.bomaknoxville.com/](http://www.bomaknoxville.com/)

Construction Specifications Institute (CSI), Knoxville Chapter  
Brent Williams  
Energy Control Consultants, Inc.  
P.O. Box 1610  
Powell, TN 37849  
(865)755-2306  
Email: [bw@coolsunlight.com](mailto:bw@coolsunlight.com)  
Web Site: [www.csiwse.net/en/11051](http://www.csiwse.net/en/11051)

East Tennessee Chapter Health Physics Society  
Joe Alvarez  
PO Box 7006, Oak Ridge, TN 37831-7006  
591-0175  
Email: [jalvabeta@gmail.com](mailto:jalvabeta@gmail.com)  
Web Site: [www.etchps.org](http://www.etchps.org)

East Tennessee Computer Society (ETCS)  
William Dittus, president  
1232 Foxcroft Drive, Knoxville, TN 37923  
690-8472 (h) 690-8472 (org.)  
Email: [etcspres@etcs.org](mailto:etcspres@etcs.org)  
Web Site: [www.etcs.org](http://www.etcs.org)

East Tennessee Discovery Center  
Evelyn Napier  
P.O. Box 6204  
Knoxville, TN 37914  
(865)594-1494  
Email: [ETDC@comcast.net](mailto:ETDC@comcast.net)  
Web Site: [www.etdiscovery.org/](http://www.etdiscovery.org/)

East Tennessee Geological Society  
David Kessler  
613 Hardwicke Drive, Knoxville, TN 37923  
693-4647 (h) 560-5248 (org.) 690-3626(fax)  
Email: [david.kessler@shawgrp.com](mailto:david.kessler@shawgrp.com)  
Web Site: [www.discoveret.org/etgs](http://www.discoveret.org/etgs)

Energy Services Coalition

Russ Nelson  
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1321 Sunset Dr., B-100  
Johnson City, TN 37615  
(423)534-8242  
Email: [rnelson@energysystemsgroup.com](mailto:rnelson@energysystemsgroup.com)  
Web Site: [www.energyservicescoalition.org/chapters/TN/index.html](http://www.energyservicescoalition.org/chapters/TN/index.html)

Energy, Technology & Environmental Business Association (ETEBA)  
Linda Short  
P.O. Box 5483  
Oak Ridge, TN 37831  
(865)591-8776  
Email: [Linda@eteba.org](mailto:Linda@eteba.org)  
Web Site: [www.eteba.org](http://www.eteba.org)

Family Business Institute  
Ed Seaver  
Suite 202-B  
Knoxville, TN 37932  
(865)3866248  
Email: [ed@familybusinessinstitute.org](mailto:ed@familybusinessinstitute.org)  
Web Site: [www.familybusinessinstitute.org/](http://www.familybusinessinstitute.org/)

Friends of Oak Ridge National Laboratory (FORNL)  
Robert A. Costner, Jr.  
127 Nebraska Ave, Oak Ridge, TN 37830-8143  
483-7091  
Email: [rcostner1@comcast.net](mailto:rcostner1@comcast.net)  
Web Site: [www.discoveret.org/fornl/](http://www.discoveret.org/fornl/)

IEEE: Institute for Electrical and Electronic Engineers  
East Tennessee Section  
Terry Kurtz  
865/671-9021  
Email: [ieee.tk@gmail.com](mailto:ieee.tk@gmail.com)  
Website : <http://www.ieee.org/go/easttn>

ISA: The International Society of Automation, Oak Ridge Chapter  
Stan Jones, President  
(865)417-1360 (pager)  
Web Site: [www.isa.org](http://www.isa.org)

International Facilities Management Association (IFMA), East TN Chapter  
Jayne Burritt  
Public Building Authority  
(865)215-8420  
Email: [jburritt@ktnpba.org](mailto:jburritt@ktnpba.org)  
Web Site: [www.ifmaeasttn.org/](http://www.ifmaeasttn.org/)

Knoxville Engineers Club  
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(865)632-7513

Email: [mstownovich@tva.gov](mailto:mstownovich@tva.gov)

National Management Association (NMP)

H. Diane James

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Web Site: [www.etlcnma.org/](http://www.etlcnma.org/)

Oak Ridge Isochronous Observation Network (ORION)

Dr. David E. Fields

RSCC, 276 Patton Lane, Harriman, TN 37748-5011

865-882-4533

Email: [fieldsde@aol.com](mailto:fieldsde@aol.com)

Web Site: [www.roanestate.edu/obs](http://www.roanestate.edu/obs)

Roane Anderson Professional Society

Bob Stone

118 Canterbury Road, Oak Ridge, TN 37830

483-4417

Email: [robarsto@bellsouth.net](mailto:robarsto@bellsouth.net)

Science Club

Contacts: Katherin Goluoglu & Julie Ezold

Emails: [goluoglu1@ornl.gov](mailto:goluoglu1@ornl.gov) and [ezoldjg1@ornl.gov](mailto:ezoldjg1@ornl.gov)

Web Site: <http://rsicc.ornl.gov/scienceclub/>

SECME, Inc.

Cassandra Osborne

ORHS, 127 Providence Road, Oak Ridge, TN 37830

425-9601(school) ext 2640 425-9678(fax)

Email: [cosborne@ortn.edu](mailto:cosborne@ortn.edu)

Web Site: [www.ortn.edu/system/special/secme.html](http://www.ortn.edu/system/special/secme.html)

Sigma Xi, Oak Ridge Chapter

Lynn Kszos

ORNL, PO Box 2008, Oak Ridge, TN 37831-6477

574-4784 (w) 576-3041(fax)

Email: [kszosla@ornl.gov](mailto:kszosla@ornl.gov)

Web Site: [www.sigmaxi.org](http://www.sigmaxi.org)

Society for Technical Communication (STC), East Tennessee Chapter

Katrina Gramelspacher

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Knoxville, TN 37920

(423) 645-5110

Email: [kgramelspacher@absentys.com](mailto:kgramelspacher@absentys.com)

Web Site: [www.stc-etc.org](http://www.stc-etc.org)

Society of Fire Protection Engineers (SFPE), Tennessee Valley Chapter

David Baity

2115 Choto Road, Knoxville, TN 37922

241-3326(w)

Email: [baitydjr@ornl.gov](mailto:baitydjr@ornl.gov)

Web Site: [www.tvspfpe.org](http://www.tvspfpe.org)

Society of Manufacturing Engineers (SME), Knoxville/Oak Ridge Chapter  
Ralton Emory or Garret Hendrix  
PO Box 50792, Knoxville, TN 37950-0792  
924-2350(RE) or 740-3421(GH) 865-981-5252(fax)  
Emails: [remory@sme.org](mailto:remory@sme.org) or [garret@hendrixengineering.com](mailto:garret@hendrixengineering.com)  
Web Sites: [www.sme.org](http://www.sme.org)  
or [www.sme107.org](http://www.sme107.org)

Society of Women Engineers (SWE), Smoky Mountain Section  
Samantha C. Childers  
400 W. Summit Hill Dr., Knoxville, TN 37902  
632-7559  
Email: [scchilders@tva.gov](mailto:scchilders@tva.gov)  
Web Site: [www.swe.org/RegionD/D006-SmokyMountain/](http://www.swe.org/RegionD/D006-SmokyMountain/)

Technical Society of Knoxville  
Walter O. Wunderlich, Secretary/Treasurer  
3221 Essary Dr., Knoxville, TN 37918  
687-6591 (h)  
Emails: [wowunder@bellsouth.net](mailto:wowunder@bellsouth.net) or [prdodson@tva.gov](mailto:prdodson@tva.gov)  
Web Site: [www.technicalociety.net](http://www.technicalociety.net)

Tennessee Alumni & Students for Sustainable Campuses (TASSC)  
Linda Hardyman  
P.O. Box 57  
Murfreesboro, TN 37132  
(615)904-8096  
Email: [lhardymo@mtsu.edu](mailto:lhardymo@mtsu.edu)  
Web Site: [www.climateaction.net](http://www.climateaction.net)

Tennessee Inventors Association (TIA)  
Igor or Ann Alexeff  
2790 Oak Ridge Turnpike, Oak Ridge, TN 37830  
483-0151 (h) 483-0151 (org.)  
Email: [ialexeff@comcast.net](mailto:ialexeff@comcast.net)  
Web Site: [www.TnInventors.org](http://www.TnInventors.org)

Tennessee Society of Professional Engineers (TSPE), Knoxville Chapter  
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Web Site: <http://www.tnspe.org>

Women In Nuclear, Oak Ridge Chapter  
President: Elizabeth Phillips  
Email: [PhillipsEC@oro.doe.gov](mailto:PhillipsEC@oro.doe.gov)