



First Lego League Needs Volunteers on Saturday, November 12th

The best way to summarize FIRST LEGO League is to say that it is a robotics program for 9 to 14 year olds which is designed to get children excited about science and technology -- and teach them valuable employment and life skills.

In FLL, the children do the work! And the work is programming an autonomous robot (using the LEGO® MINDSTORMS® robot set) to score points on a thematic playing surface and create an innovative solution to a problem as part of their research project. These two elements - the Robot Game and Project - make up what we call our yearly Challenge.

Your help is needed for the FLL Qualifying Event on Saturday, Nov. 12th at the Memorial High School, 5840 S Hudson Ave, Tulsa. Judges, referees and general helpers are needed. Start time for volunteers is 7 AM. Contact Lane Matheson at 918-991-8326 or MatheLa@tulsaschools.org for registration or more information. See <http://firstlegoleague.org/> for a description of "2011 Food Factor Challenge."

Fab Lab Tulsa Update

Now open to the public, Fab Lab Tulsa is a community oriented, 501 (c) (3) non-profit private charity, host of state-of-the-art equipment ready to fabricate (almost) anything.

The Hardesty Center for Fab Lab Tulsa opened its door, at 710 South Lewis, September 13, 2011, for its building dedication and grand opening. A large group of donors and eager participants gathered for the hands-on event where they viewed the collection of equipment, gathered information on the possibilities available in the facility and took home souvenirs.

Literally, the Fab Lab is a place where anyone can make anything. This concept is best understood by going to the facility to see the 4'x8' Shop-Bot, Modella CNC mill, laser cutter/etcher, vinyl cutter, electronics lab and 3D printer. Fab Lab Tulsa was created through collaboration between the Massachusetts Institute of Technology and local donors.

Currently, there is a great offer open to anyone ready to start making their ideas into real, tangible, fabrications. For the \$99 Jump Start package, one will receive four hours of training in the lab, a take home project and another four hours to work in the lab. For membership, donations, and any other information call 910 CITYLAB (348-9522) and arrange for an appointment to stop by the lab. The Hardesty Center is open Tuesday and Thursday 10 am to 9 pm, Wednesday and Friday 8 am to 5pm, or Saturday 12 pm to 5 pm. The lab is closed Sunday and Monday. Go to fablabtulsa.com for more information.

Do You Know a Girl in the 7th-10th Grade Who Wants to Attend Mother/Daughter TEA?

SATURDAY, OCTOBER 29th

The Mother/Daughter Technology Engineering Aptitude (TEA) is a one day event that provides girls with a tremendous opportunity to complete hands-on activities and

2011 CALENDAR of EVENTS

P - PDH Credit given

October 5

Tour of Tulsa Recycling and Transfer Center - P

October 10

ONEOK Pipeline Control Center - P
Jerry Brown and EST Board Meeting

October 24

ProCure Proton Therapy Center - P
Rob Lake

UPCOMING EVENTS

November 14:

Introduction to Infrared Imaging for Condition Assessment - P

November 28:

No meeting

December 15:

Engineer's Holiday Dinner

**EST
Meetings
are always open.
Visitors are always
welcome.**

TULSA ENGINEER

Mother/Daughter TEA continued...

interact with an engineering professional to learn about valuable, high-wage opportunities in the engineering industry. The Mother/Daughter TEA event was founded to encourage young women to take an interest in pursuing a career in the ever-widening engineering field.

The idea for organizing a mother/daughter engineering workshop came from the belief that a supportive environment at home that encourages engineering and technological careers offers young girls an extraordinary opportunity to develop interests and aspirations in a field that is creative, collaborative, flexible and lucrative - engineering. Mothers are involved to support their daughters in discovering the kinds of engineering careers that are available.

The event will be held **October 29th at the Memorial High School**, Engineering Wing, from 9 AM – 2 PM. Daughters in grades 7th – 10th are invited. The cost is \$5.00 per Mother/Daughter Team, payable at the door. Lunch is included. Contact Lane Matheson at 918-991-8326 or MatheLa@tulsaschools.org for registration or more information.

Tour of Tulsa Recycling & Transfer Center - Oct. 5th

EST will be joining the NE Oklahoma Chapter of APWA (American Public Works Association) for a tour of Tulsa's new MRF (Materials Recovery Facility) part of the recycling and transfer center at 1150 N Peoria on Wednesday October 5, including a lunch sponsored by Warren Caterpillar. Please RSVP if you will be attending the lunch to Cheryl Reichman (APWA, City of Tulsa) at 918-596-9603 or creichman@cityoftulsa.org or Mike Miller (EST, M & D Controls) at 918 664-7511 or manddcontrols@aol.com before noon, Monday October 3. The cook-out lunch will start at 11:15 am, followed by the tour of the recycling facility at noon.

About ONEOK

The EST program for October 10 will be a tour of the ONEOK pipeline control center in the ONEOK building. Here is some information on ONEOK.

Originally founded in 1906 as an intrastate natural gas pipeline business in Oklahoma, today ONEOK is one of the nation's premier energy companies involved in the natural gas and natural gas liquids businesses.

- ONEOK is the sole general partner and 42.8 percent owner of ONEOK Partners (NYSE: OKS), a master limited partnership engaged in natural gas gathering and processing, natural gas pipelines and natural gas liquids.
- ONEOK is three natural gas distribution companies serving more than 2 million customers in Oklahoma, Kansas and Texas.
- ONEOK is an energy services company, marketing natural gas and related services to local distribution companies, industrial customers and power generators.

For more than 100 years, ONEOK has delivered quality products and services to our customers. As we've evolved from a traditional natural gas distributor into a diversified energy company, we've embraced new technologies and ideas, but we've kept the fundamentals that have worked all along – sound business decisions, commitment to growth and solid returns.

About ONEOK Partners

ONEOK Partners, L.P. is one of the largest publicly traded master limited partnerships and a leader in the gathering, processing, storage and transportation of natural gas in the U.S. and owns one of the nation's premier natural gas liquids (NGL) systems, connecting NGL supply in the Mid-Continent and Rocky Mountain regions with key market centers.

Natural Gas Pipelines

- Transmission pipeline miles: 7,100
 - Regulated pipeline miles: 6,500 (report to PHMSA)
 - ◆ Interstate miles: 1,450
 - ◆ Intrastate miles: 5,050
 - Non-regulated pipeline miles: 600 (mostly operated by OFS)

- ◆ These are intrastate pipelines
- *Above information does not include Northern Border Pipeline
 - 50-percent equity investment
 - 1,398 miles

Natural Gas Liquids

- Total NGL pipeline miles: approximately 7,000
 - Distribution miles: 3,660
 - Gathering – raw feed miles: 3,280
- *Above information does not include Overland Pass Pipeline
 - 50-percent equity investment
 - 760 miles

Some Interesting Engineering Snippets:

Why They Chose STEM

Inside Higher Ed (09/07/11) Nelson, Libby A.

Although most U.S. college students pursuing science, technology, engineering, or math (STEM) degrees decided to do so in high school, just 20 percent said that their pre-college education prepared them "extremely well" for those fields, according to a recent Microsoft and Harris Interactive survey. However, 55 percent of respondents said they were "very well" prepared to study STEM in college. The survey also found that male and female students chose to pursue STEM degrees for different reasons. Female students are more likely to want to make a difference, while males are more likely to be inspired by a lifelong enjoyment of games, toys, and clubs focused on the hard sciences. The survey, which polled 500 undergraduate students working toward STEM degrees at U.S. institutions, reinforces that good teaching and preparation are crucial to attracting and keeping students' interest, according to Microsoft's Jane Broom. Students mentioned high salaries, intellectual stimulation, and the potential for future jobs as key motivating factors for why they chose to pursue STEM degrees. The survey also found that 66 percent of the students think the United States, compared to other countries, is doing a poor job of teaching STEM subjects.

Koomey's Law: Computing Efficiency Keeps Pace With Moore's Law

InfoWorld (09/13/11) Samson, Ted

Jonathan Koomey recently led a study proving that computers have doubled in energy efficiency at about the same rate as processing power, staying in line with Moore's Law. The researchers examined the energy efficiency of computing devices dating back to the 1940s, when the Electronic Numerical Integrator and Computer (ENIAC) was first revealed. The researchers developed a graph showing that since ENIAC's inception, computing efficiency has steadily doubled every 1.57 years. The computing industry has been able to maintain this pace by continually building more efficient power supplies and smaller transistors that use less power. "At this juncture, continuing the historical trends in performance (or surpassing them) is dependent on significant new innovation comparable in scale to the shift from single-core to multi-core computing," according to the study. The researchers say that developers must write code that is more efficient and that takes better advantage of underlying power-management features within the hardware.

BIO - October 24

Rob Lake, ProCure Proton Therapy Center



Rob joined the ProCure Proton Therapy Center in Oklahoma City as Center President in January, 2011. As President of the Center, Rob oversees its development, growth and operation. He has been a healthcare executive for 25 years with great experience in managing operations for leading health care providers and medical groups. Prior to joining ProCure, he served as CEO of four hospitals. Most recently Mr. Lake served as President and CEO of North Arkansas Regional Medical Center, and as CEO of Great Plains Regional Medical Center in Elk City. He has also served on the board of the Oklahoma Hospital Association from 2006 to 2010, and most recently served as Chairman

of the Board of the American Hospital Association's Governing Council for Small and Rural Hospitals. Mr. Lake earned both his Bachelor's Degree and Masters of Business Administration from Texas Tech University.

This presentation is rescheduled from August 8 when Mr. Lake was unavoidably diverted from speaking to EST.

BIO - November 14

Jim Umdenstock, P.E. Principal and Chief Thermographer



Jim Umdenstock, PE, received his B.S. degree in Civil Engineering in 1971 from the University of Kansas. Mr. Umdenstock was commissioned in the Army Corps of Engineers military branch as a construction officer, and performed in various troop positions at the construction battalion and company level and at the Kaiserslautern Army Facilities Engineer from 1972 thru 1977 in Germany. In 1978 he and his family moved to Tulsa where he was employed as design engineer and construction manager for Tulsa Public Works. In 2010 he left Tulsa Public Works and formed Tulsa Infrared Field Services LLC www.tulsainfrared.com, which provides certified preventative and predictive infrared imaging investigations for residential, commercial, and industrial clients in northeast Oklahoma. In 2011 Jim formed the Society of Tulsa Thermographers, a support group for Tulsa area professional infrared thermographers.

Presentation: This introduction – equally appealing to civil, mechanical, and electrical engineers - consists of over 65 color and infrared images which clearly demonstrate the effectiveness and ease of applying infrared analysis to engineering condition assessments for electrical, rotating equipment, building envelopes, insulated roofs, steam and boiler applications. Bridge deck and petrochemical applications will be briefly reviewed.

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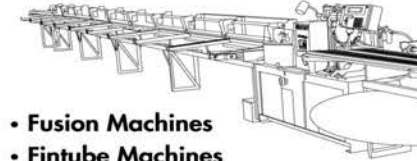




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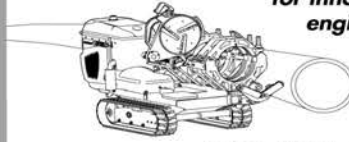
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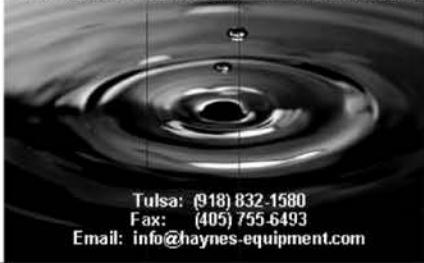
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