The University of Tulsa Challenge X (TUCX) Outreach Report

Section 1: Minimum Requirements

Category	Points	Explanation
Team Staffing Support	2	Melissa Young, Freshman, is our dedicated Outreach Coordinator. She earned course credit during the Spring semester for her work as Outreach Coordinator.
Reporting & Planning	5	Quarterly reports were submitted on or before each deadline.
Web Development	3	The TUCX website is maintained at www.hev.utulsa.edu/challengex. The homepage summarizes the goals of Challenge X and includes link to www.challengex.org and GMAbility. Additional pages provide information about the competition and local sponsors, team leaders, outreach activities from years 1 and 2, and information about our project. Extra features include two web-based games that target elementary and middle school students.
K-12 Outreach	3	The TUCX team visited 4 classes in a public elementary school, 14 classes at a private school (Pre-12) during the year to make presentations. The team also invited students from public schools, private schools and homeschool groups to 4 events. We reached an estimated 1200 K-12 students through these school-sponsored events. This far exceeds the minimum of 3 presentations.
Community Outreach	3	The TUCX team has spoken to several professional groups, shown off the car at an auto show as well as having hosted multiple events to teach Girl Scouts, Boy Scouts and their leaders about the Challenge X project. With a total of 19 community outreach events, this is well in excess of the required minimum of 3 community outreach activities.
Media Relations	4	The TUCX team held their own press conference at the beginning of the school year that garnered substantial television and newspaper coverage. In addition, the school was contacted by other media outlets for stories before and after our press conference. We had a total of 4 newspaper articles, and 4 television channels as well as 3 web articles during the year.

Section 2: Media Relations

Name of Event	Location	Date
Press Conference	Keplinger Hall lawn	8/24/2005

Press Conference and informational session held at The University of Tulsa on the lawn between Keplinger Hall and Allen Chapman Activity Center. Three local television stations and about 100 students attended the event. The presentation included the distribution of informational brochures. We had many team members and advisors as well as the Equinox and the Paradyne (a previous project) on hand to inform the public about the Challenge X project at TU.

Team Leader, Chris Flory talks to members of the media at our press conference.

Section 3: Media Coverage

Media Outlet	Type	Date
University Photographers Association	Website www.upaa.org/winners.html	6/2005
Tulsa World	Newspaper	7/10/2005
University of Tulsa	Website www.utulsa.edu/news/article.asp?Key=1167	8/9/2005
KTUL (Channel 8)	Television	8/16/2005
Tulsa Business Journal	Newspaper	8/19/2005

Oklahoman	Newspaper	8/21/2005
The Collegian	Newspaper	8/23/2005
KJRH (Channel 2)	Television	8/24/2005
KOTV (Channel 6)	Television	8/24/2005
FOX-23	Television	8/24/2005
KOTV	Website www.kotv.com/main/home/stories.asp?whichpage=1&id=89027	8/25/2006

The University of Tulsa Challenge X team has received a lot of attention from the media and the public since the 2005 competition in Detroit. University photographer, Walt Beazley, submitted this photograph of a group of our Challenge X team to the University Photographers Association and won one of their summer competitions!

When we returned from Detroit, the *Tulsa World* ran an article entitled "TU Students Driven to Design Alternative Vehicles" (7/10/2005) that focused on the two car competitions the College of Engineering and Natural Sciences competed in over the summer. Congratulations to the Chem-E-Car team for winning the world championship!

TU students driven to design alternative vehicles

Two groups, in separate contests, are working on the cutting edge of hybrid-car research.

By Ann Marchmont
World Staff Writer

As gas prices tower over $2, University of Tulsa students battle over car designs that will make driving cheaper and more eco-friendly.

Five chemical engineering students make up the "team to beat" at the first International Chem-E-Car Challenge, in Glasgow, Scotland, on Sunday.

Another group of TU students is one year deep into a three-year contest to make a sport utility vehicle use less gas and produce less pollution.

Both contests put the students on the leading edge of hybrid-car research and put them in contact with business and government recruiters.

Their research may help tug America away from petroleum use and toward alternative fuels and electric vehicles.

The U.S. Department of Energy expects Americans to use almost 20 percent more energy for travel in 2025 than in 2005. Retired TU electrical engineering professor Bob Stratton thinks the world's petroleum supply will eventually run dry, especially as growing countries such as China and India use vehicles more.

As the gas supply runs low, prices will soar, he predicted. Both factors will push drivers toward vehicles that run on more efficient diesel fuel, that use electricity and not gas, and that use electricity and gas, he said. Hybrids use two or more power sources.

The percent of hybrid vehicles driven in the United States is expected to increase sevenfold to 3.5 percent of the market by 2016, market research company J.D. Power and Associates projected last month. The percent of diesel vehicles is forecast to more than double to 7.5 percent of the market.

Taylor Coleman, a TU chemical engineering junior, 'likes' the idea of creating new technology.

Last November at the national Chem-E-Car Competition, Coleman and the rest of the Chem-E-Car team pulled out a shoebox-sized car, powered by home-made fuel cells. Fuel cells are devices that produce electricity using hydrogen and oxygen.

Competitors' jaws dropped when they saw the contraption, Coleman said, and the TU entry beat other cars run by store-bought fuel cells.

Now, a flurry of global results has declared TU the favorite in the World Congress of Chemical Engineering competition, said Christ Patton Luke, applied associate professor of chemical engineering. Patton Luke flew with the students on Thursday to Scotland.

TU students get to experiment with fuel cells in a bigger way for the Challenge X competition, sponsored by General Motors Corp., the Department of Energy and other groups. Seventeen teams of students are replacing the engines of GM Equinoxes with hybrid control systems.

Students can go crazier with their designs than professionals because the students are using donated money and they can put in as much time over the next two years as they want, Patton Luke said. Students also don't have to worry about how much their cars would cost consumers.

The competitions slip students into the shoes of professionals, who also have to write technical reports, convince donors and honors their ideas would work, raise money for their research and work with budgets and deadlines, Patton Luke said.

"There's so many things about this that we can't teach them in the curriculum," she said.

Chris Flory, a Challenge X team leader and a mechanical engineering senior, doesn't like school, but he works hard at the career because it seems like a hobby.

"The school didn't have a drag-racing team, so I figured I'd do the hybrid car," he said.

Flory also hopes his participation will vault him into a job at a major car company.

Patton Luke remembers seeing at least 40 companies, Department of Energy laboratories and government agencies at the first contest in Challenge X last month. Companies have asked her for resumes of future graduates.

Flory sounds wistful as he recounts that visit to Detroit, with a tour of GM facilities.

TU's team placed 11th last month, after a year of designing and computer modeling. How well will the team do on building its ideas?

Flory sees plenty of challenges ahead, and the biggest might be living up to the team's potential.

Christ Patton Luke, applied associate professor of chemical engineering at the University of Tulsa, holds a small vehicle powered by a fuel cell, one of two vehicles a team of TU students will demonstrate in a contest Sunday at Glasgow, Scotland.

The Challenge X team sent out a press release about a press conference to be held on August 24, 2005 to show off our new Equinox to the public. Some outlets were so excited about the project that they ran stories as soon as they got our press release! On August 16, Channel 8 (ABC affiliate KTUL) featured students Chris Flory and Aaron Acklen at our shop, Hurricane Motor Works (HMW) on the 10:00 p.m. news. On August 19, the *Tulsa Business Journal* ran an article and photo of the team. On August 21, the *Daily Oklahoman* ran an article on page 18A entitled "Students win vehicle for fuel conversion".

EDUCATION BRIEFS

Students win vehicle for fuel conversion

THE OKLAHOMAN | NEWSOK.COM

A team of University of Tulsa students won a Chevrolet Equinox as part of a national competition, and the students will soon remove the sport utility vehicle's gasoline engine and begin to transform it into a diesel-electric hybrid. The students will add fuel cells that can convert hydrogen gas into electricity.

The goal of the three-year competition is to help find ways to reduce automobile pollution and improve energy consumption.

The car was delivered this month, but TU students received the keys June 9 in Pontiac, Mich., during a contest marking the end of the first year of competition among 17 universities. Major sponsors of the Challenge X competition are General Motors and the U.S. Department of Energy. Last year TU received a $10,000 grant, which was used in part for vehicle simulation and modeling and subsystem development and testing.

The competition schedule calls for teams to test drive their cars on GM's desert proving ground in Phoenix next summer.

On August 23, the student newspaper, *The Collegian*, ran "TU moving to the forefront of technology" in the first edition of the year.

THE COLLEGIAN/ISSUE 1 NEWS TUESDAY, AUGUST 23, 2005 PAGE 3

TU moving to the forefront of technology

Neal Galloway
News Editor

A team of students from The University of Tulsa has received a brand new Chevrolet Equinox as part of a national competition called "Challenge X: Crossover to Sustainable Mobility."

The TU team includes some 40 students majoring in physics, computer science, and electrical, chemical, mechanical and petroleum engineering. They plan to remove the sport utility vehicle's gasoline engine and begin to transform the vehicle into a diesel-electric hybrid by adding fuel cells that can convert hydrogen gas into electricity, with the goal of the three-year competition to help find ways to reduce automotive pollution and decrease energy consumption.

TU also won the first international contest for model cars powered only by a chemical reaction on July 16. Teams from seven countries competed in the International "Chem-E-Car Challenge" in Glasgow, Scotland.

In order to win teams were faced with the task of running a chemically powered model car to within the shortest distance of a given line carrying a certain amount of weight. The distance and load that the model cars were forced to carry was not revealed until one hour before the competition and the teams had to calibrate their chemical reactions accordingly. "Hydrogen Hurricane," the TU team's car came within about six inches of the line to claim first place and around $1,000.

And finally, TU recently sold its first patent, U.S. Patent No. 6,732,180, to Overpeer, Inc. (a leading provider of anti-piracy services to major record labels, film studios, game publishers and software companies). The patent was awarded just last year to TU computer science professors John Hale and Gavin W. Manes. It involves imitating digital media files on peer-to-peer networks to help fight illegal file sharing. The technology covered by this patent can impair the ability of peer-to-peer users from illegitimately acquiring copyrighted files.

With all of that early coverage, we were concerned that nobody would show up at our press conference. At noon on August 24 we were pleased that television Channel 2 (NBC affiliate KJRH), Channel 6 (CBS affilitate KOTV), and Channel 23 (FOX affiliate KOKI) attended and broadcast multiple stories:

5:00 News on Channel 2 and Channel 6

6:00 News on Channel 6 (with a subsequent web article)

9:00 News on Channel 23

10:00 News on Channel 2 and 6

Section 4: K-12 Outreach

Activity	Location	Date
Jenks Southeast 4th grade science presentation (2 classes)	Jenks Southeast Elementary School classrooms	November 21, 2005 9:30 – 11:30 AM
Presentations at Jenks Christian Academy (14 classes)	Jenks Christian Academy Cafeteria	January 5, 2006 8:15 AM – 2:00 PM
Society of Women Engineers' High School Girls Retreat (students from 7 public high schools)	University of Tulsa North Campus Model Lab	February 17, 2006 5:00 pm – February 18, 2006 7:00 pm

e-Week Open House (14 public & private middle schools + 2 homeschool groups)	University of Tulsa Keplinger Hall	February 22, 2006 8:00 AM – 2:00 PM
Tulsa Engineering Challenge (students from public & private high schools throughout the city)	Tulsa Technology Center, Jones Airport	March 16, 2006 8:00 AM – 12:00 PM
High School Chem-E Car Competition	University of Tulsa, Keplinger Hall	April 25, 2006 11:00 AM – 1:00 PM
Jenks Southeast 4th grade science presentations (2 classes)	Jenks Southeast Elementary School classrooms	May 12, 2006 1:00 – 3:00 PM

<u>Note on photographic documentation</u>: Our legal department has advised us not to post pictures of children without parental permission. Fortunately, we do obtain this permission at most Scout events, but we are not able to obtain permission at our school events.

11/21/2005: Dr. Christi Patton, Dorian Marx, and Brian Young made presentations and hands-on demonstrations on energy, motion, and future automatic technologies to each of two classes of 4th graders at Jenks Southeast Elementary School. Emphasis was placed on energy technologies for reducing fuel use and emissions. (No photos available.)

1/5/2006: Dr. Christi Patton, Dorian Marx and Brian Young made presentations to 275 students at Jenks Christian Academy. Separate presentations were given to the Pre-School/Kindergarten classes, 1st – 2nd grade classes, 3rd – 4th grade classes, 5th – 8th grade classes, 9th – 10th grade classes and 11th – 12th grade classes. Although the details of the presentations and hands-on activities varied with the maturity of the audience, in each case, the key message was the future of energy technologies to reduce fuel usage and emissions. (No photos available.)

2/17/2005 – 2/18/2005: Society of Women Engineers' High School Girls Retreat: Michelle Van Schoyck, Ryan Guldan, Dorian Marx, and Andrew Harmon presented the CX automobile and made presentations and hands-on demonstrations about energy, motions, and future automatic technologies to 12 high school girls between the ages of 15 and 18. Emphasis was placed on energy technologies for reducing fuel use and emissions.

Girls look at the stripped-down Equinox.

Team member Andrew Harmon demonstrates the diesel and electric motors.

2/22/2005: e-Week Open House: Michelle Van Schoyck, Dorian Marx, Brian Walsh, and Dr. Christi Patton held walk up activities regarding Challenge X, alternative fuels, and energy reduction for middle school children from several public and private middle schools and two homeschool groups. 314 students signed in during the event. (No photos available.)

3/16/2006: Tulsa Engineering Challenge: Dr. Christi Patton, Dr. Bob Stratton, Spencer Flournoy, and Olaf Jarochowski made presentations and hands-on demonstrations about energy, motions, and future automatic technologies to approx 450 6^{th}-12^{th} grade students from Tulsa area schools. Emphasis was placed on energy technologies for reducing fuel use and emissions. After the event, several high school students came to visit the Tulsa Challenge X team during work sessions to learn even more about the project. (No photos available.)

4/25/2006: The Chemical Engineering Department at TU hosted the 3^{rd} Annual High School Chem-E-Car competition at Keplinger Hall. Eleven teams of 5 high school students from public schools and two homeschool groups attended with their teachers and families. We also had a group of 12 Chinese exchange students attend as observers. After the students completed their poster presentations, they had the opportunity to take a look at the Tulsa Equinox and learn about Challenge X. Team members Dorian Marx and Michael Kennedy with advisors, Dr. Christi Patton and Dr. Daniel Crunkleton were present to answer their questions.

High School Students investigate the Tulsa Equinox Hybrid

5/12/2006: Dr. Christi Patton and Brian Young visited Jenks Southeast Elementary school for presentations and hands-on demonstrations on energy, motion, and future automatic technologies to children in each of two classes of fourth graders (different classes from the November presentations). Emphasis was placed on energy technologies for reducing fuel use and emissions. (No photos available.)

Section 5: Community Outreach

Activity	Location	Date
ASEE Annual Conference Presentation & Paper	Portland, Oregon	June 13, 2005 4:00 – 6:00 PM
Solar Rayce	Broken Arrow	July 18, 2005 4:00 – 7:00 PM
Challenge X Equinox Display	University of Tulsa, Keplinger Hall	August 22 – August 24 , 2005
Activities Fair	University of Tulsa, Intramural Field	August 25, 2005 6:00 – 8:00 PM
Brownie Science Day	University of Tulsa	September 10, 2005 10:00 AM – 2:00 PM
ASEE Regional Meeting Presentation & Paper	University of Arkansas, Fayetteville, AR	September 16, 2005 9:30 – 11:00 AM
Classic Chevrolet Car Club	University of Tulsa, North Campus Model Lab	September 24, 2005, 8:30 – 9:30 AM
United Way Car Show	University of Tulsa, Reynolds Center	October 8, 2005 8:00 AM – 12:00 PM
IEEE Tulsa Section Meeting	Oral Roberts University Tulsa, OK	November 1, 2005 7:00 – 8:30 PM
University Administrators Luncheon	University of Tulsa, North Campus Model Lab	November 29, 2005 12:00 Noon – 1:00 PM
Magic Empire Council Girl Scout leaders meeting	South Tulsa Baptist Church Tulsa, OK	November 29, 2005 7:00 PM – 8:00 PM
Alpha Delta Pi presentation	Alumni Association function with spouses at home of Karen Campbell	December 18, 2005 2:00 – 5:00 PM
American Association of University Women meeting	Tulsa County Library	January 15, 2006 12:30 – 2:30 PM
Brownie Science Day	University of Tulsa, Keplinger Hall	February 11, 2006 10:00 AM – 2:00 PM
Society of Women Engineers Girl Scout Badge Day	University of Tulsa	February 25, 2006 10:00 AM – 3:00 PM
Oklahoma Society of Professional Engineers Meeting	ONEOK Auditorium Tulsa, OK	March 2, 2006 12:00 – 1:00 PM
Girl Scout Troop 440	University of Tulsa, North Campus Model Lab	March 2, 2006 4:00 – 6:00 PM
Cub Scout Pack 385	Jenks Southeast Elementary School	March 13, 2006 7:00 – 8:00 PM
EVCT Meeting	Electric Vehicle Center of Technology, Midwest City, OK	April 27, 2006 7:00 – 9:00 PM

6/13/2005: Dr. Daniel Crunkleton and Dr. Christi Patton presented a paper "ChE Students and Automotive Design Competitions" at the ASEE Annual Meeting in Portland, OR. We had the opportunity to talk to many engineers about how and why we can tie automotive design to chemical engineering.

7/18/2005: Solar Rayce event in Broken Arrow. We took a previous project and cX posters to the checkpoint for the Solar Rayce. Chris Flory, Justin Rempel, Joshua Buck, Ryan Gillette, Aaron Acklen, Bob Strattan, Christi Patton, Matt Roberds attended. The team spoke to about 200 visitors with total exposure of about 700 visitors.

Solar Rayce 2006: Broken Arrow Checkpoint

8/22/2005: Equinox displayed inside Keplinger Hall with information posters and brochures about Challenge X project. Over 40 brochures were picked up.

Driving the Equinox into KEP!

8/25/2005: Activities Fair 6 – 8 pm on the Intramural Field on Delaware Ave. Brought the car, set up poster and banners. Had a table with brochures and a sign-up list. Visited by approximately 300 students and faculty/staff. Many just wanted to look at the car, several others were motivated to join the team.

Display setup to show off our new Equinox.

9/10/2005: Brownie Science Day at TU. 100 2nd and 3rd grade girls visited campus and learned about current and future automotive technology.

Josh Buck teaches the girls to use a voltmeter.

9/16/2005: Dr. Christi Patton delivered a paper entitled “The Benefits of an Interdisciplinary Design Project” at the ASEE Regional Meeting in Fayetteville, AR. Co-authors were Dan Crunkleton, John Henshaw, Robert Strattan and Doug Jussaume.

9/24/2005: Classic Chevrolet Car Club visits HMW from 8:30 to 9:30 to learn about our new project. Dr. Bob Strattan, Dr. John Henshaw, Joshua Buck and Jon Throneberry were on hand to show them our old and new automotive projects. Challenge X brochures were distributed to the 75 guests.

Several Shots of the Classic Chevy Car Club’s visit to HMW

10/8/2005: Xindi Wang, Dorian Marx, Christina Bishop and Dr. Christi Patton exhibited the Equinox and our posters at the United Way Car Show at the Reynolds Center on 11th & Harvard. We talked to about 40 people about our vehicle and distributed brochures.

Dorian and Xindi explain the changes in store for Isabelle (our Equinox).

11/1/2005: Joshua Buck, Scott Rainwater and Andrew Harmon made a presentation to 26 IEEE student and professional members at the IEEE Tulsa Section Meeting. The title of their talk was "Performance Oriented Control of a Hybrid SUV" with the key message that HEV control can improve fuel economy. This paper was selected for presentation at the IEEE Region 5 Student Paper Contest in 2006.

Challenge X students Scott Rainwater, Andrew Harmon and Joshua Buck prepare for their presentation.

11/29/2005: The Tulsa team invited the University Administrators to a casual lunch and tours of the facilities and introduction to our Challenge X project. The audience included the University President (Stedman Upham) as well as the VP of Research, the Dean of the College of Engineering and Natural Sciences, the Dean of Arts and Sciences, the Dean of Business Administration, the Dean of the Graduate School and department chairs of the College of Engineering and Natural Sciences. The key message at this event was to share the goals of Challenge X and show the Tulsa team's progress.

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EE Chairman Gerald Kane, President Steadman Upham, ME Chairman Ed Rybicki, GM Mentor Kevin MacFadden

Graduate Dean Janet Haggerty Haggerty, Challenge X advisor John Henshaw, Arts & Sciences Dean Tom Benedictson, Business Administration Dean Gale Sullenberger, Team Leader Chris Flory

ChE Chairman Geof Price and Engineering and Natural Sciences Dean Steven Bellovich

Controls Team Leader Joshua Buck with Dean Bellovich and President Upham

11/29/2005: Dr. Christi Patton and Melissa Young made a presentation to 24 Girl Scout leaders at a Magic Empire Council leaders meeting. The presentation included information about the Challenge X competition and demonstration of hands on activities. The key message was how to teach the girls in their troop about energy and automotive technologies.

Dr. Patton introducing Challenge X to Girl Scout Leaders

Dr. Patton demonstrating propulsion techniques using toy cars

12/18/2005: Dr. Christi Patton spoke to the Alpha Delta Pi alumni group and their spouses about Challenge X and the University of Tulsa's participation. The key message was on the emerging technologies that will reduce fuel usage and emissions. About 45 people were present. (No photos available.)

1/15/2006: Dr. Christi Patton spoke to 28 professional women from the Tulsa area at the American Association of University Women (Tulsa Chapter). The presentation centered on energy motion and future automotive technologies as well as the impact women are making in this field. (No photo available.)

2/11/2006: Brownie Science Day: Dr. Christi Patton, Clara Seaman, Michael Kennedy, Dorian Marx, Kyle Magrini, Tom Stoltz, Ryan Guldan, and Melissa Young made presentations and hands-on demonstrations about energy, motions, and future automatic technologies to approximately 200 2nd and 3rd grade Brownie Girl Scouts. Emphasis was placed on energy technologies for reducing fuel use and emissions.

Ryan Guldan sets up for Brownie Day.

The girls discover new automotive propulsion systems at TU's Brownie Day.

2/25/2006: SWE sponsors Girl Scout Badge Day each year. This year, the Challenge X team (Ryan Guldan, Taylor Coleman and Dr. Christi Patton) hosted one of the badge workshops. A group of twelve 15 – 16 year old Girl Scouts spent the day learning about caring for the car they may learn to drive today and the ones they'll be driving in the future!

Team member Taylor Coleman discusses the Challenge X propulsion system to the Girl Scouts.

Taylor Coleman and Ryan Guldan demonstrate how the "insides" of the car work.

The girls learned to check the fluids in a car.

3/2/2006: Joshua Buck, Ryan Guldan and Dr. Bob Strattan made a presentation on Challenge X and the University of Tulsa's presentation to about 20 professional engineers. The key message was how we are adapting emerging technologies to reduce fuel usage and emissions. (No photos available.)

3/2/2006: Girl Scout Troop 440 visited HMW. Melissa Young and Dr. Christi Patton made presentations and hands-on demonstrations about energy, motions, and future automatic technologies to 10 fifth grade Junior Girl Scouts. Emphasis was placed on energy technologies for reducing fuel use and emissions.

The girls of Junior Girl Scout Troop 440 pose in front of the car.

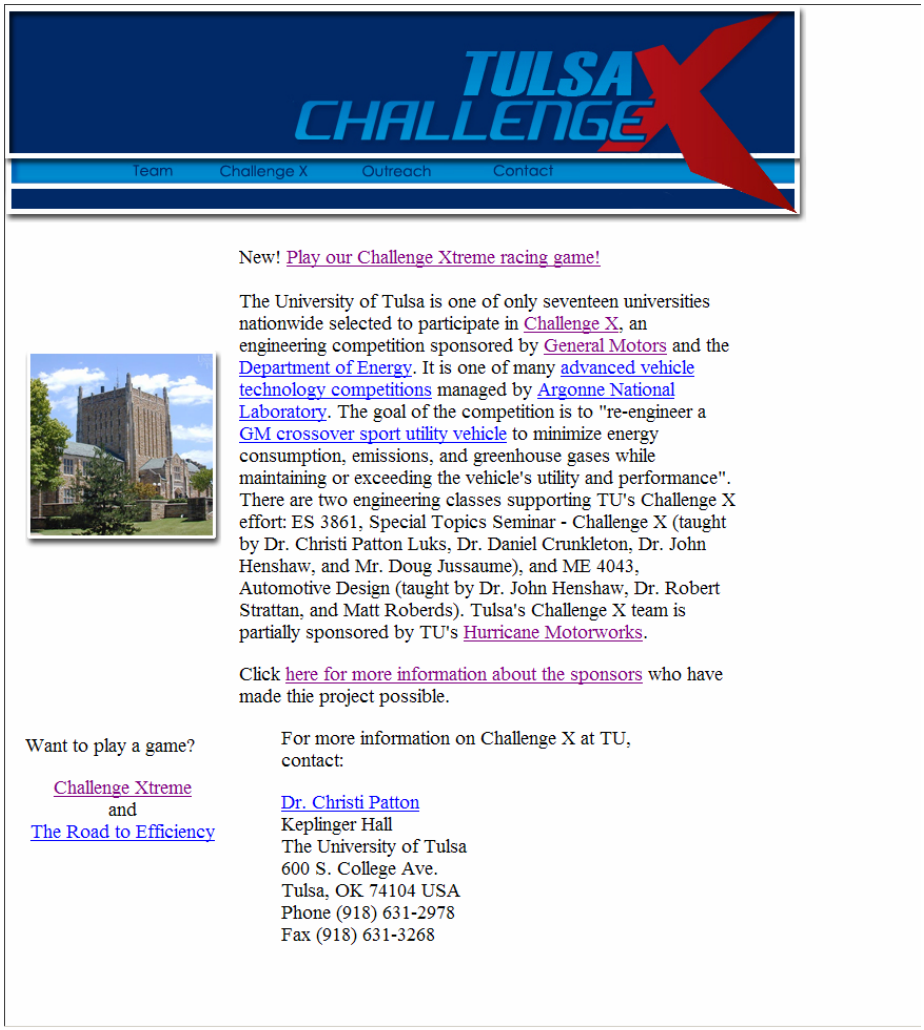
3/13/2006: Melissa Young and Dr. Christi Patton visited Cub Scout Pack 385 for a presentation and hands-on demonstrations about energy, motions, and future automatic technologies to approximately 60 boys and their families. Emphasis was placed on energy technologies for reducing fuel use and emissions.

Dr. Christi Patton talks to Cub Scout Pack 385 about current and future automotive propulsion systems.

4/27/2006: Dr. Bob Strattan, faculty advisor, made a two-hour presentation "Hybrid Systems Overview" that included descriptions of the Challenge X program goals and process and the University of Tulsa's participations. This presentation was made at the Electric Vehicle Center of Technology (EVCT) at the Mid-Del Technology Center in Midwest City, OK. The audience was 15 engineers and technicians from the Eaton Hybrid Powertrain who came from all over the US to obtain training at the EVCT. The audience members are working on advanced hybrid-electric powertrains for industrial and commercial vehicles. The EVCT has one of the few programs in the nation for certifying electrical vehicle technicians and offering training programs on EVs and HEVs. (No photo available.)

Section 6: Website

The URL for our team website is www.hev.utulsa.edu/challengex. The website contains the basic Challenge X requirements for both Year 1 and Year 2.



We are very appreciative of the generous support from both national and local sponsors. In particular, we'd like to acknowledge sponsorships from:

- Headline Sponsors
  - U.S. Department of Energy
  - General Motors Corporation
- Platinum Sponsors
  - Natural Resources Canada
  - The MathWorks
  - National Instruments
  - Freescale Semiconductor
  - AVL North America, Inc.
  - U.S. Environmental Protection Agency
  - U.S. Department of Transportation
- Gold Sponsors
  - National Science Foundation
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- Silver Sponsors
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  - Intrepid Control Systems, Inc.
  - UGS
  - MotoTron Corporation
  - XM Radio
  - On Star
  - Gamma Technologies, Inc.
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  - Igus, Inc.
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  - Seibon International, Inc.
  - IEEE-Tulsa
  - Boeing/Spirit Aerosystems
  - Dr. Robert Strattan
  - Mrs. Loren Buck

For more information about sponsoring Challenge X at TU, please contact:

Dr. Christi Patton Luks
Keplinger Hall
The University of Tulsa
600 S. College Ave.
Tulsa, OK 74104 USA
Phone (918) 631-2978
Fax (918) 631-3268

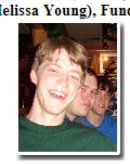
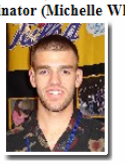
Faculty:

Dr. Daniel Crunkleton, Chemical Engineering
Dr. John Henshaw, Mechanical Engineering
Doug Jussaume, Electrical Engineering
Dr. Christi Patton Luks, Chemical Engineering
Matt Roberds, Mechanical Engineering
Dr. Robert Strattan, Mechanical Engineering / Emeritus Electrical Engineering

Students:

Team Leader: Joshua Buck

Subteam Leaders: Mechanical Systems (Spencer Flournoy), Front Build (Olaf Jarochowski), Rear Build (Christopher Flory), Energy Storage (Ryan Guldan), Controls (Kyle Magrini), Outreach and Fundraising (Dorian Marx), Radar (Kent Dennis), Safety Officer (Emily Dixon), Outreach Coordinator (Melissa Young), Fundraising Coordinator (Michelle Whalen)

Christopher Flory (Rear Build) and Ryan Guldan (Energy Storage)

Kent Dennis (Radar)



Olaf Jarochowski (Front Build), Josh Buck (Team Leader), and Dorian Marx (Outreach/Fundraising)



Emily Dixon (Safety), Melissa Young (Outreach), and Michelle Whalen (Fundraising)

The team currently consists of 23 ME majors, 18 ChE majors, 9 EE majors, 3 CS majors, 2 physics majors, 1 math major, 1 music major, 1 English major and 1 management major.

To participate, join our ES 3861 class at HMW on Monday at 5:00 p.m. or come for an all-hands work session at HMW on Monday or Wednesday at 6:00 p.m.

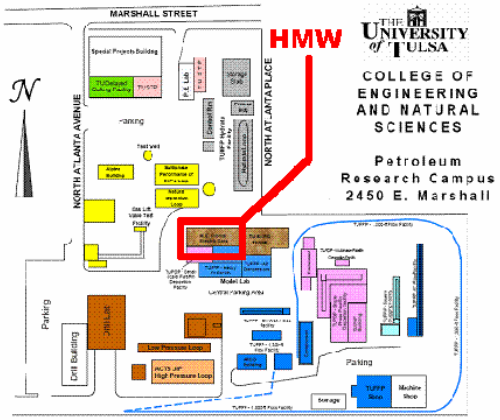
See below for a map to HMW on TU's North Campus.

For more information on Challenge X at TU, you can contact:

Dr. Christi Patton Luks
Keplinger Hall
The University of Tulsa
600 S. College Ave.
Tulsa, OK 74104 USA
Phone (918) 631-2978
Fax (918) 631-3268

How to get from Main Campus to North Campus:

How to find HMW at North Campus:

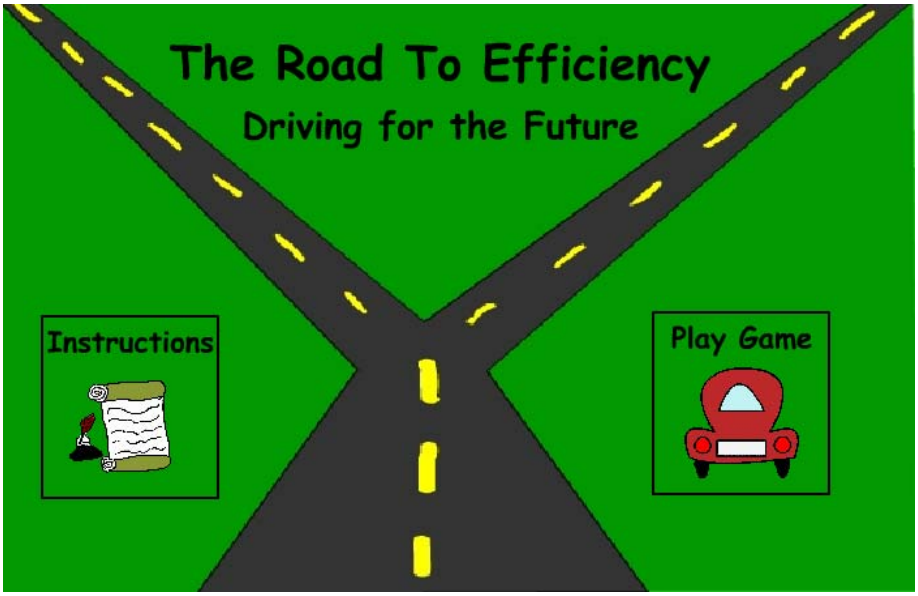


Bonus features on our website include two Java-based games: "The Road to Efficiency" and "Challenge X-treme". The team distributes business cards with links to our website and games whenever classroom presentations are made:

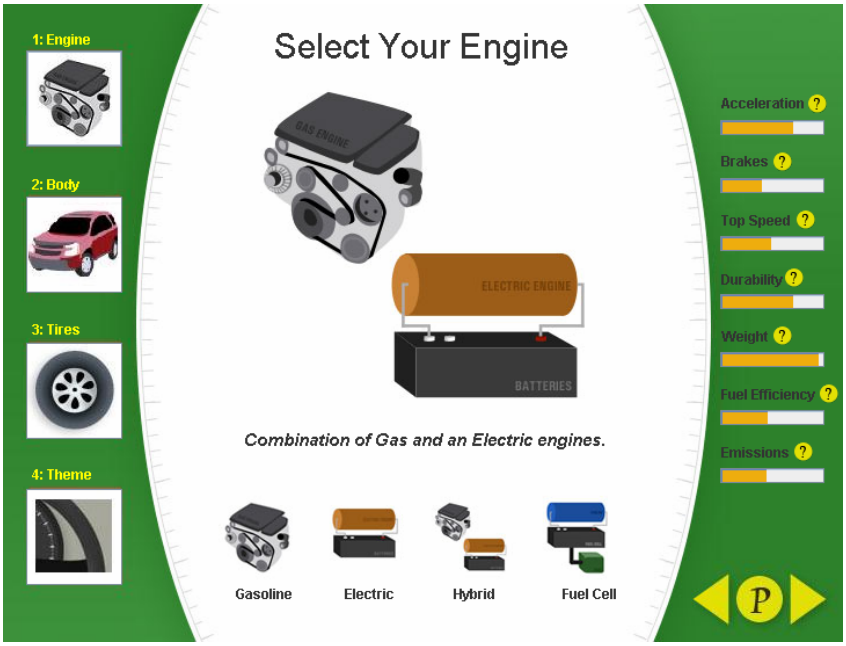
Both of these games are geared toward students in grades 2 – 8. Beta tests on the software demonstrated that simple things such as the option of pink paint on their virtual vehicles encourage girls to spend more time playing these games.

Beta testing our new game: Challenge X-treme

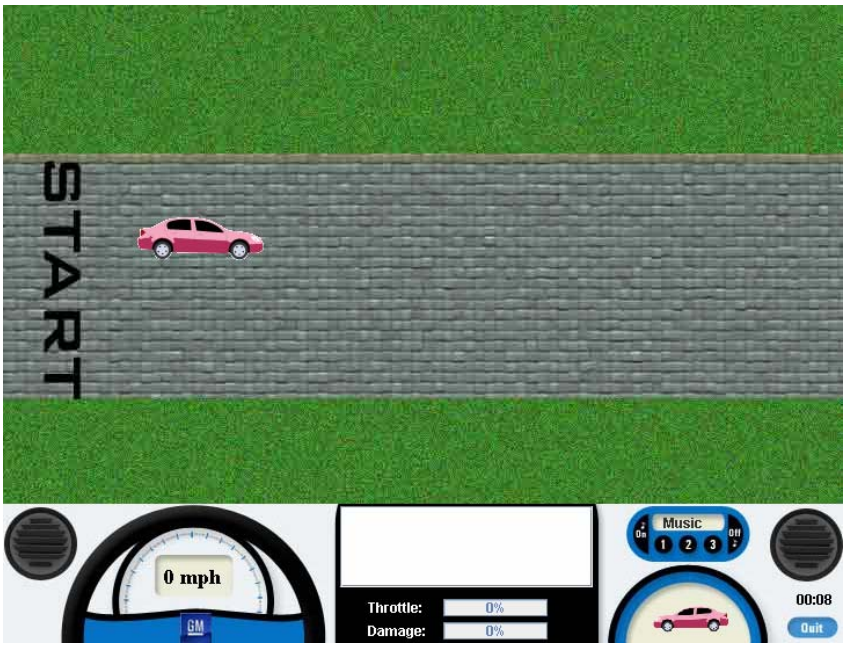
Our first game: The Road to Efficiency



Our newest game: Challenge X-treme



The Car Creation Garage



A sample track: Cow Country