



# Pre-Engineering Newsletter

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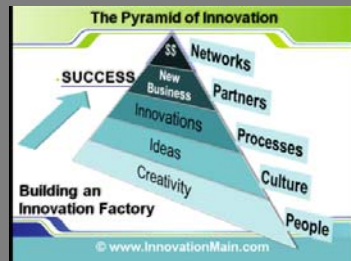
## Kent School Robotics Competition: Year Three

Under the persistent guidance and direction of its lead mentor Mr. Austin, the Robotics team at Kent, in its third year, has increased in competence and membership.

### Regional FIRST Robotics Competition 2011: Team 2785

From March 31<sup>st</sup> to April 2<sup>nd</sup>, Kent's Robotics team traveled to the Connecticut Convention Center to join 57 other teams at the Northeast Utilities CT Regional FIRST Robotics Competition, one of the 59 regional FIRST Robotics competitions. The Robotics competition this year, called LOGO MOTION™, is played by two competing alliances on a flat 27' x 54' foot field. Each alliance consists of three teams with their robots. They compete to hang as many inflated plastic shapes (Logo pieces) as they can on a grid during a match, which lasts 2 minutes and 15 seconds.

Members of the team and students who volunteered substantial time outside their winter term commitment to work on the robot are: Alexander Atanassov, Ronjoat Aulakh, George Benda, Zheng Cai, Pui Yin Chung, Richard Diego, Andrew Domzal, Liam Fistos, Sophie Gegeshidze, Joshua Hughes (co-captain), Junsoo Kim, Tae-Jin Kim, Alexander Lanzoni, Jay LeFebvre, Spencer Martin, Liam Nadire, Ryan Nadire, Garrett Osborne, William Osborne, So Young Park, Nilesh Patel, Suthee Ruangwises, Charlie You and Lingje Xu (co-captain).



"An idea is only an idea until you convert it into something meaningful. That's when innovation starts." - Sanjay Dalal

## A new Pre-E Course Proposal: Manufacturing Science, Prototyping and Computer controlled Machining

Mr. Heslop of the Math department, holder of a Masters degree in manufacturing from WPI, is proposing a Manufacturing course. This course will introduce students to manufacturing science and engineering and prototype part production. Students will learn how to go from a solid (CAD, computer-aided design) model to a machined part, using CAM software (computer-aided manufacturing) and CNC machining. They will also be exposed to associated issues in manufacturing process analysis, engineering design, material science, and in dimensional and surface metrology. Some of the course's objectives are:

- (1) Identify manufacturing processes



## Second Pre-Engineering Lecture of the year (April 18, 7:00-8:00 in the Science Auditorium)

### Visit April 18<sup>th</sup> 2011 of Dr. Stacy Klein-Gardner, Professor at Vanderbilt University's School of Engineering and Director of K-12 STEM outreach

Associate Professor of the Practice of Teaching & Learning.

Associate Professor of the Practice of Biomedical Engineering

Associate Professor of Radiology and Radiological Sciences

Department of Teaching & Learning

#### Education:

Ph.D. Biomedical Engineering, 1996, Vanderbilt University, Nashville, TN.

M.S. Biomedical Engineering, 1993, Drexel University, Philadelphia, PA.

B.S.E. Biomedical and Electrical Engineering, 1991, Duke University, Durham, NC.

#### Research Interests:

Designing and evaluating biomedical engineering modules for use in K-12 and college levels. Developing safe, hands-on, inexpensive ways to teach medical imaging.



that work best for the different types of materials used and what manufacturing processes are best for the product being created  
(2) Program a CNC machine that will perform simple operations such as drilling, cutting, locating surfaces, finding dimensions

(3) Create Code that will give the machine information about the part being developed and the toolpath needed to take to create the product.

(4) Identify the x, y, and z directions in space when it comes to machining parts

## A manufacturing renaissance for America?

*At an MIT forum, experts examine new ways to pursue a good old idea: making things.*

Over the last few decades, the sector of the U.S. economy devoted to manufacturing has lost ground to the services sector. The number of U.S. manufacturing jobs has declined from nearly 20 million in 1979 to about 12 million today. Yet as the recent global recession suggests, services can propel the economy only so far. There is no substitute for making tangible, useful products.


But what form will new kinds of manufacturing take? At an MIT roundtable discussion on Monday titled "The Future of Manufacturing — Advanced Technologies," more than a dozen of the Institute's faculty shared converging ideas about how to reinvigorate America's goods-producing businesses. The roundtable followed a broader campus forum hosted by MIT President Susan Hockfield on March 1, in which faculty members, some of whom also participated in Monday's discussion, offered ideas about how to strengthen America innovation and thus its overall economy. These meetings are part of a larger effort by MIT to contribute the Institute's expertise in emerging technologies and innovation policies to the national effort to revitalize the American economy."

## Mr. Andrews accepted at the Fermilab Teacher Research Associates program (TRAC) Program

Mr. Andrews, a Wentz fellow, has been offered a prestigious summer position in the Fermilab TRAC program, which provides outstanding teachers with exposure to cutting edge science and technology with the intent of employing the newly gained exposure in the classroom.



**WENTZ FACULTY FELLOWSHIPS** Promoting Pre-Engineering at Kent

 Dr. Gary Science Dept.	Studied <b>Earth History: Interactions of Life and the Earth Environment</b> - highly interdisciplinary involving geology, biology, and climatology. a controversial hypothesis regarding mass extinctions, the snowball Earth hypothesis.
 Mr. Saxon Math Dept. Chair	A class set of <b>LEGO Mindstorm Robotics Kits</b> the aim of integrating engineering concepts and problem solving techniques into the current math curriculum
 Mr. Austin Math Dept.	Took a one-week <b>course in 3-dimensional Modeling</b> . The core design, visualization, and procedures give a backbone to the design process that students learn in <b>Engineering Design</b> , a new Pre-Engineering course I teach at Kent School.
 Mr. Andrews Math Dept.	Developed a <b>Pre-E course, Structures</b> , with emphasis on exercises based on special construction projects, focusing in particular on design, stress and simulation aspects. The students test the properties of various materials and form conclusions about how to examine questions of aesthetics, function, durability, and cost.

The Earthquake Machine was used in Mr. Andrews' Pre-Engineering course, *Structures*, this past winter term. The project-based learning of this course enhances student understanding of math and science concepts by making the concepts relevant and more enjoyable. Students designed a bridge from balsawood, then tested their structures by attaching them to the earthquake machine. They varied the speed using the variable speed power supply to see how long it took for the bridge to fall apart.

## US lawmakers eye plan to compete with Asia in robotics

AFP (4/5) reports, "US senators unveiled an initiative Monday to try to narrow the US gap with Asian nations more advanced in robotics, proposing exposing American high school students to a curriculum heavier on technology and science." Jeanne Shaheen (D-NH) "sponsored the plan calling for exposing students to heavier doses of Science, Technology, Engineering and Math (STEM,) seen as essential starting points on tracks to the better-paying jobs of the present and future." Shaheen said, "What we know is that young people who participate in these [programs] are much more likely to get excited about these subjects, science and math and engineering and technology. They are more likely to go to college to major in these subjects... So this is one of the areas where we need to invest."

## FIRST® Announces \$14.7 Million in College Scholarships for 2011

FIRST Scholarships coming from America's foremost engineering colleges and universities

**FIRST®** (For Inspiration and Recognition of Science and Technology), a not-for-profit organization founded by Dean Kamen to inspire young people's interest and participation in science and technology, announced that the number of scholarship dollars available to college-bound FIRST participants has grown to almost \$15 million. Sixteen new providers have joined the FIRST Scholarship program this year, increasing the available dollar amount by \$2.4 million over 2010.

A total of 146 colleges, universities, corporations, and associations support the FIRST mission by generously donating merit-based scholarship opportunities to eligible students who want to take their FIRST experience to the next level. Last year, nearly one in three applicants was offered a FIRST Scholarship.

Contact me if you have any questions or you need more information.

Dr. Nadire

Wentz Pre-Engineering Program Director

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