

# Changing the Conversation: Be You Imagine

Mary Darrow, Transfer Coordinator  
College of Engineering

Carol Heaverlo, Program Coordinator  
Program for Women in Science and Engineering

Iowa State University College of Engineering

# Objectives

- Discuss various media messaging that influences career aspirations.
- Discuss national and local STEM enrollment trends.
- Share resources and strategies to address STEM equity.



**Two words that describe an engineer...  
TTYD**



**National Academy of Engineering (NAE) Report**

**Changing the Conversation (CTC):  
Messages for Improving Public Understanding of  
Engineering**

**For more information, go**

**[www.engineeringmessages.org/](http://www.engineeringmessages.org/)**

## From TCT Report...

*"Data collected over many years provide evidence that, despite the impact of engineering on our daily lives, most Americans do not understand what engineers do and are largely unaware of the opportunities available through an engineering education..."*

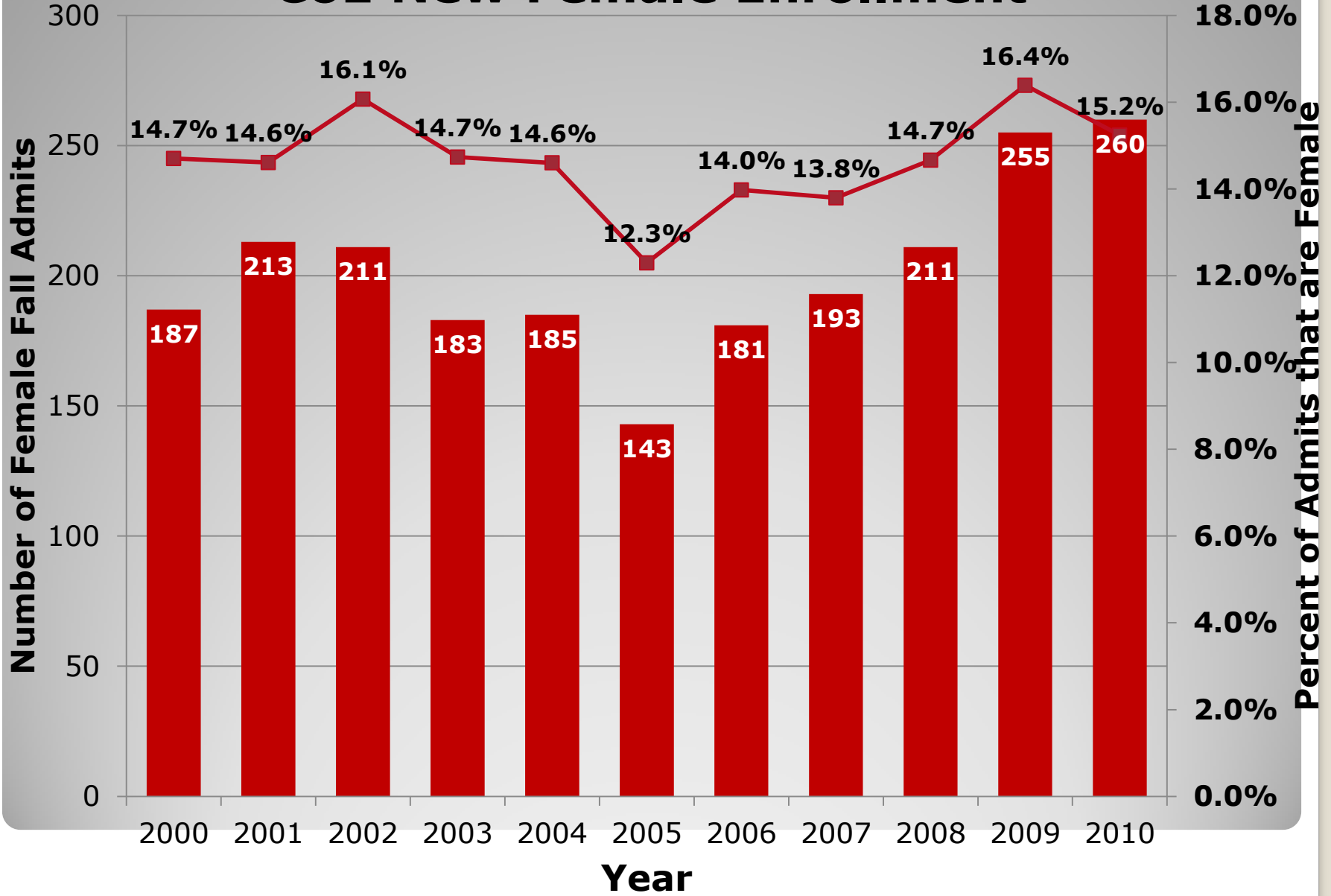
*Women, African Americans, Hispanics, Native Americans, and some Asian American groups are significantly underrepresented in engineering, based on their proportions in the population at large.*

## Trends

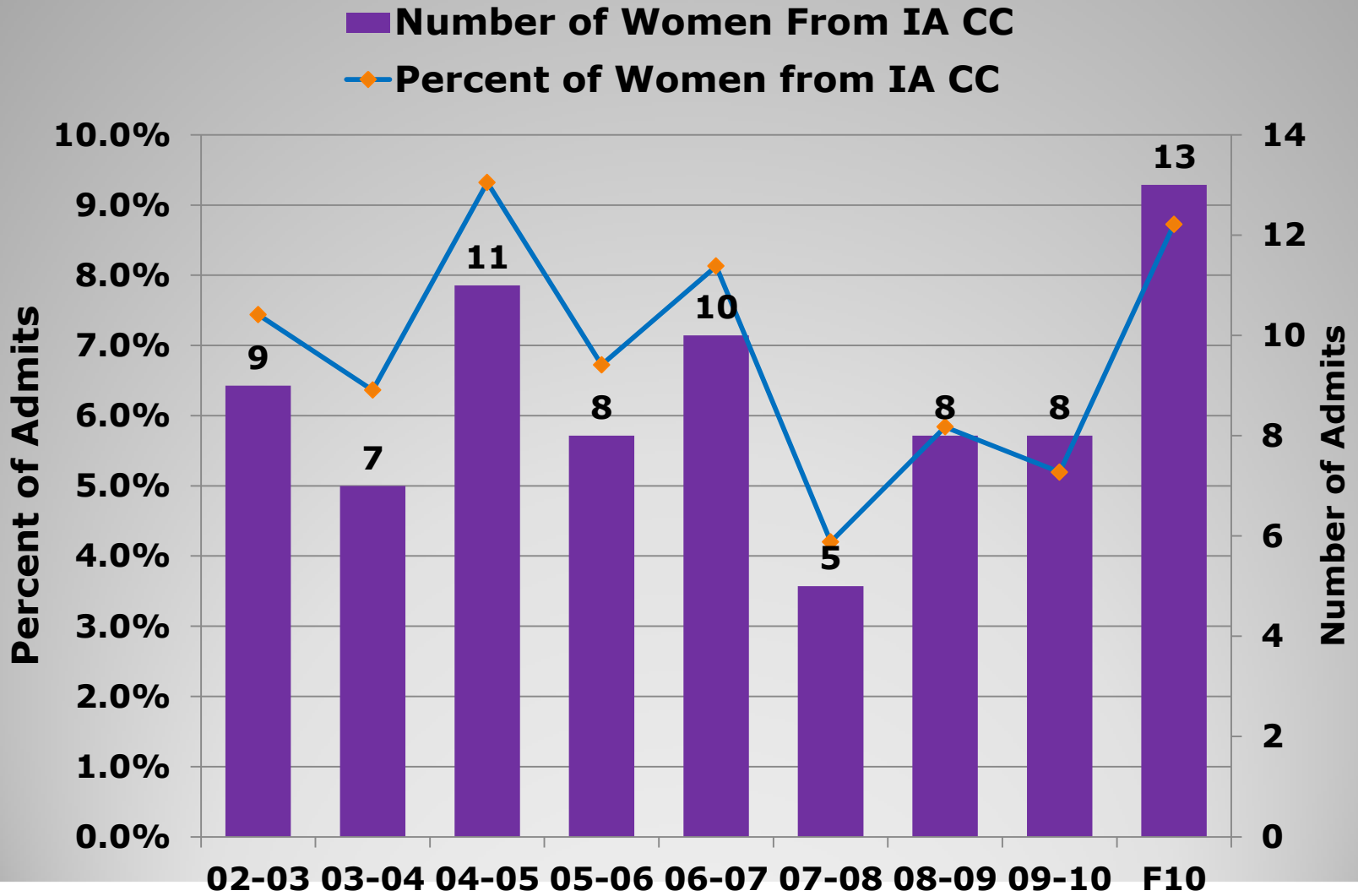
Less than 20% of students enrolled in engineering degree programs are women, yet more women are now pursuing college degrees than men

Girls take math and science courses at the same rates as boys, and perform as well as or better

# CoE New Female Enrollment



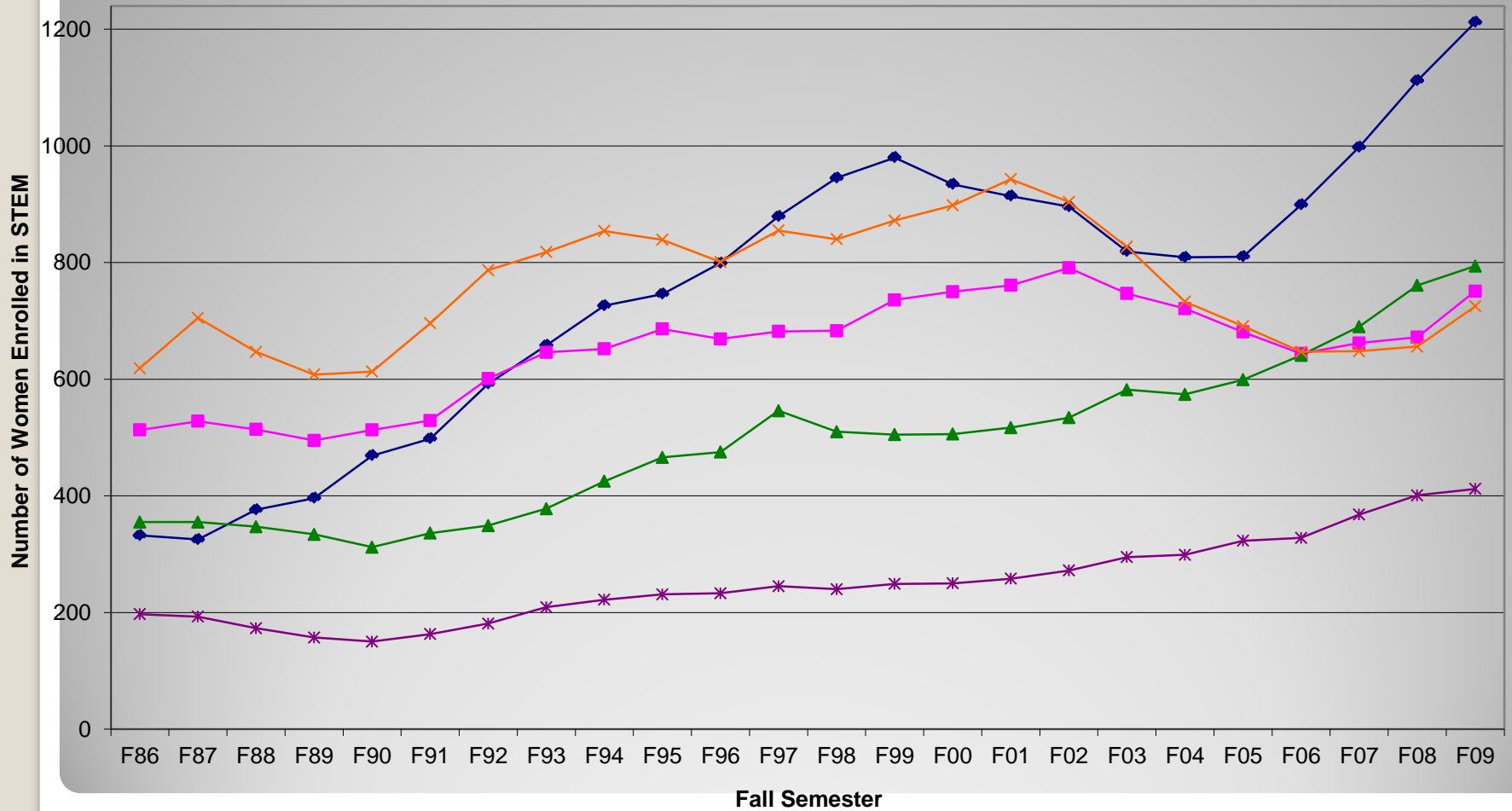
# Iowa State University College of Engineering





# Iowa State University College of Engineering

## Female Enrollment of Undergraduate and Professional STEM Students at Iowa State University



◆ Agriculture & Life Sciences    ■ Engineering    ▲ Human Sciences    × Liberal Arts & Sciences    \* Veterinary Medicine

## Boys vs. Girls

Engineering is very good career choice

Gender and ethnicity

- African American boys (more than girls) think **salary extremely important** to job choices
- African American girls want a **job that makes a difference**
- Hispanic girls (more than boys) think engineers are **nerdy and boring**
- Hispanic boys are more likely to believe engineering has a **positive effect on people's everyday lives**



## Adults think...

Scientists more than engineers:

- Save lives
- Care about protecting the environment
- Improve the quality of our lives
- Sensitive to societal concerns
- Inclusive of women and minorities
- Care about the community



## Engineering Messages Recommendations

- Stop reinforcing the images of 'nerdy and boring'
- Stop focusing on math and science as the needed inputs and instead focus on the **outputs, career opportunities, and making a difference in the world**
- Use the word **create, not build**



## Engineering Messages Recommendations

- Use images of people, not things: especially avoid using gears and mechanical looking things
- Use the following five words in describing engineering: **discovery, design, imagination, innovation, contribution**
- Describe engineer as **creative problem solvers, essential to health, happiness and safety**
- Emphasize that engineers **shape the future**

**Engineer Your Life**™  
A guide to engineering  
for high school girls  
*Dream big. Love what you do.*

Why Engineering?  
Meet Inspiring Women  
Find Your Dream Job  
Making It Happen

For Counselors & Parents  
For Engineers  
For Middle School Girls  
(see [engineergirl.org](http://engineergirl.org))

Why Engineering?

Ten great  
reasons  
why you'll  
love it

ASK an Engineer! >

- 1 ▶ *Love your work, AND live your life too!*
- 2 ▶ *Be creative.*
- 3 ▶ *Work with great people.*
- 4 ▶ *Solve problems, design things that matter.*
- 5 ▶ *Never be bored.*
- 6 ▶ *Make a big salary.*
- 7 ▶ *Enjoy job flexibility.*
- 8 ▶ *Travel.*
- 9 ▶ *Make a difference.*
- 10 ▶ *Change the world.*

What IS  
an engineer?

✉ E-mail | Share: [in](#) LinkedIn [Digg](#) [f](#) Facebook [Mixx](#) [Stumble It!](#) [del.icio.us](#)

[Home](#) | [About This Site](#) | [Coalition](#) | [Site Map](#) | [Video Index](#) | [Technical Help](#) | [Feedback](#) | [Credits](#) | [Link To Us](#)

# Iowa State University College of Engineering

**Engineer Your Life™**  
Dream big. Love what you do.

A guide to engineering  
for high school girls

Why Engineering?  
Meet Inspiring Women  
Find Your Dream Job  
Making It Happen

For Counselors & Parents  
For Engineers  
For Middle School Girls  
(see [engineergirl.org](http://engineergirl.org))



Major funding for Engineer Your Life provided by The National Science Foundation and Northrop Grumman Foundation.  
Additional funding provided by Stephen D. Bechtel, Jr and the United Engineering Foundation (ASCE, ASME, AIChE, IEEE, AIME).

[About This Site](#) | [Site Map](#) | [Video Index](#) | [Technical Help](#) | [Feedback](#) | [Credits](#)

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

# Iowa State University College of Engineering

**IOWA STATE UNIVERSITY**  
**College of Engineering**

College Index | ISU Index

Search...  
 Engineering ONLY

**APPLY NOW**

[Juniors and Seniors](#) [Transfer Students](#) [Graduate Students](#) [Parents and Families](#) [K-12 Students](#) [Teachers and Counselors](#)

[Home](#)  
[Engineering Degree Programs](#)  
[Why Iowa State Engineering?](#)  
[Admissions](#)  
[Visit Campus](#)  
[Engineering Scholarships and Financial Aid](#)  
[Student Life](#)  
[Resources](#)  
[Engineering Student Services Staff](#)

**CONTACT US**

Connect and learn more:  
[f](#) [t](#) [s](#) [You Tube](#)

**Prospective Students**



Touch and feel virtual objects. Haptic devices bring them to life by giving you a "feel" for the object through resistance and weight feedback.

Your education is an adventure, and engineering is an amazing place to explore. What does an engineer do? Creatively solve problems. Bring science to everyday use. Apply technology to make our world a better place. In the process of becoming an engineer, you will discover more about yourself and accomplish more than you thought possible.

**BE > YOU  
IMAGINED.**

**TWO MINUTES WITH**



**Why Study Engineering at Iowa State?**



**2015 CHALLENGE**

**INNOVATE ONLINE**  
College Magazine

*Personalize* **YOUR DESKTOP**  
FREE, Student-Designed Desktop Wallpapers

College of Engineering, Engineering Recruitment & Community Outreach, 110 Marston Hall, Ames, IA 50011, 515 294-8365, [engineering@iastate.edu](mailto:engineering@iastate.edu)  
Copyright © 2009, Iowa State University of Science and Technology. All rights reserved.  
[Non-Discrimination Statement and Information Disclosures](#)

**LOCATE US**

[www.engineering.iastate.edu/](http://www.engineering.iastate.edu/)




# Iowa State University College of Engineering

Discover Engineering    The Program for women in Science and Engineering

INDEX A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

IOWA STATE UNIVERSITY  
Program for Women in Science and Engineering

ISU Search  Go



**Ashley Disburg**  
Civil Engineering  
Class of 2010

<b>PWSE Home</b>	
K-12 Outreach	
Prospective Students	
Current Students	
Transfer Students	
Faculty/Staff	
Alumnae/Professionals	
<hr/>	
About PWSE	
Strategic Plan	
Corporate Partners	
Meet our Students	
Data/Assessment	
Giving to PWSE	
Resources	

**Our Vision**

The Program for Women in Science & Engineering will enrich science, technology, engineering and math fields by *engaging more women*, creating the opportunity for a *more competitive and diverse* state, national, and global workforce.

### Taking the Road Less Traveled


- Our Spring 2011 Conferences are now available! [Learn more about the conferences or download registration forms.](#)

### Chat Live with a WiSE Ambassador

This Fall learn more about science or engineering majors, classes, extracurricular activities, residence halls, learning communities, studying abroad, internships & co-ops (and what is the difference anyway?) or just in general about what it is like to be a student at Iowa State University. [Chat with a WiSE Ambassador](#) from 6:30pm to 8:30pm most weekdays.

### Congratulations

To Annie Olson, Senior in Mathematics, Rachel Goldsmith, Graduate Student in Civil, Construction and Environmental Engineering and Lora Leigh Chrystal, PWSE for being recognized for their leadership on the [2011 Women Impacting ISU Calendar](#).



### Summer Research Website


PWSE and the University Honors Program are excited to announce a [new undergraduate research website](#) sponsored by program for both students and faculty. If you have questions about undergraduate

### In the News...

#### WiSE Investment

Janice Davison, a retired science and mathematics teacher who taught in the California public school system for 40 years, left a \$1 million bequest in the form of a trust and insurance policies to Iowa State's Program for Women in Science and Engineering.

The bequest will be used to create scholarships for students in PWSE. When Davison established the scholarship in her will, she indicated she wanted to support young women so they wouldn't have to work as hard as she did to get through college. [Read more...](#)



#### Get WiSE with...

**Christy Petersen**  
-Veterinarian & Faculty member in Veterinary Pathology and Taking the Road Less Traveled Volunteer Presenter.

5BURG.htm

<http://www.pwse.iastate.edu/>

CTC Home Low Graphics Login About Directory Calendar Contact Enter search term Search

Engineers are **creative** problem-solvers.

Engineers make a world of **difference**.

Engineering is essential to our **health, happiness + safety**.

Engineers help **shape the future**.

## ENGINEERS HOW ARE YOU CHANGING THE CONVERSATION?

 NATIONAL ACADEMY OF ENGINEERS

OF THE NATIONAL ACADEMIES

### THE PROBLEM

 "Our economy, national security, and quality of life depend on engineers, so it is disturbing to see how few Americans, particularly young people, understand the importance and excitement of engineering."  
– Chuck Vest, President, NAE

[Public \(Mis\)Understanding of Engineering](#)

[Lack of Diversity](#)

[International Trends](#)

[Us](#)

### THE MESSAGES

 "Adoption of the messaging from Changing the Conversation has had a dramatic impact on our engineering college's ability to attract more diverse students, particularly women and minorities."  
– Jackie Sullivan, Associate Dean, College of Engineering and Applied Science, University of Colorado

[Recommended Messages & Taglines](#)

[Messaging Examples](#)

[Tips for Effective Messaging](#)

### GET ON BOARD

 "This new blueprint puts ideas into action. Just as engineering helps shape the future, this new platform will help engage young people and inspire them to pursue a career that can change the world."  
– Ellen Kullman, Chair of the Board and CEO, DuPont

[Join the Conversation](#) [Comment on the Alpha Site](#) [Suggest a Resource](#)

[The CTC Blog](#) [People](#)

[CTC Stakeholder Workshop](#) [Web 2.0 Guide](#)

Done

## Gallery Tour of Media Messaging:

## What's the Message?



# Engineering Students Changing the World

## Engineering Programs to Explore

- + Aerospace
- + Agricultural
- + Biological Systems
- + Chemical & Biological
- + Civil/ Environmental
- + Computer
- + Construction
- + Electrical
- + Industrial
- + Materials
- + Mechanical
- + Software

### Minors

- Bioengineering
- Nondestructive Evaluation (NDE)
- Nuclear Engineering
- Sales Engineering

## Careers in Engineering

+ \$57,000 Starting Salary

+ 88% Job Placement within 6 months of graduation

+ Demand is Increasing



# Questions?