Inspiring the Next Generation:
Women's Technology Program at MIT

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Women's Technology Program: Mission

Images via Women's Technology Program at MIT.

to spark high school girls' interest in future study of engineering and computer science.

WTP Program Approach

- Admit students who excel at Math and Science but are not already on the path to engineering
  - Students attend in the summer before senior year
  - Typically students who haven't been exposed to Engineering in High School
- Give them an in-depth (4-week) exposure to Engineering in one of two curriculum tracks
  - Electrical Engineering and Computer Science
  - Mechanical Engineering

WTP Program Philosophy

GENERATE INTEREST IN ENGINEERING

- Hands-on classes and team-based projects
- Expose student to broad range of engineering topics
- Correct preconceived notions about what engineers are like and what they do

I realize that engineering has so much more depth and so many more applications than I had thought. I'm looking forward to finding a field of engineering that I am really interested in and pursuing that in the future *(WTP-ME 2007)*

Images via Women's Technology Program at MIT.

WTP Program Philosophy

INCREASE CONFIDENCE

- Exposure to female engineers of all ages
- Experience living away from home on college campus
- Learn how to work in teams
- Discover ability to understand complicated concepts

I realized that with cooperative support from staff, I can learn anything, even without former background. *(WTP-ME 2007)*

Images via Women's Technology Program at MIT.

WTP Program Structure

- Residential 4-week Summer Program
  - 40 students in WTP-EECS, 20 students in WTP-ME
- Hands-on Lab Classes with Projects
- Special Final Projects (Week 4)
  - DC Motor Building for WTP-EECS
  - Rube Goldberg Machine Building for WTP-ME
- Female MIT Students/Recent Graduates are Instructors and Residential Tutors
- Faculty and Industry Guest Speakers and Tours

DC Motor Building: WTP-EECS

Images via Women's Technology Program at MIT.

Rube Goldberg Machine: WTP-ME

Images via Women's Technology Program at MIT.

Impact and Success

744 female HS students have completed WTP (2002-2015)

WTP alumnae affirm the lasting impact of WTP on their current college pursuits and on their plans for the future.
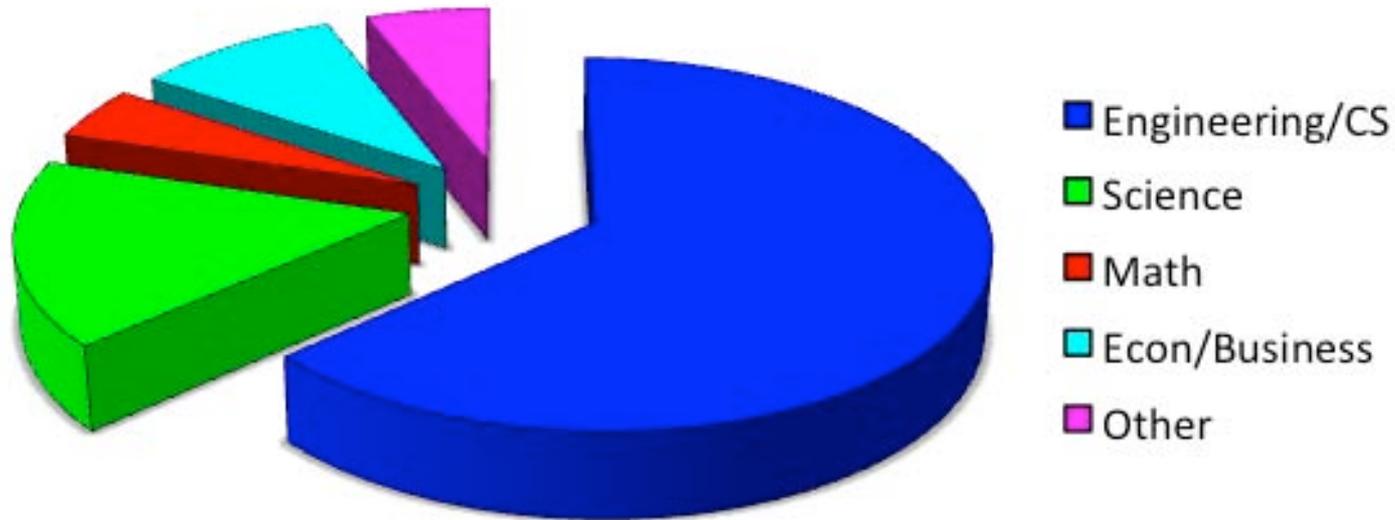
Before attending WTP many would not have:

- Applied to an engineering college
- Considered applying to MIT
- Majored in engineering or computer science

WTP Program Results

Fraction of WTP Alumnae (with known Majors)

- Engineering/CS
- Science
- Math
- Econ/Business
- Other

Graph via Women's Technology Program at MIT.

More than 60% of WTP Alumnae with known majors have majored in Engineering or Computer Science

http://wtp.mit.edu

Images via Women's Technology Program at MIT.

Acknowledgments

- Cynthia Skier, WTP Director and WTP-EECS Coordinator
- Brit d'Arbeloff
- Former Dean of the School of Engineering Thomas Magnanti for expanding the program to Mech. Eng.
- Former and current deans of the School of Engineering
- Former and current Department Chairs for the Departments of Electrical Engineering and Computer Science and Mechanical Engineering at MIT
- Center for Material Science and Engineering at MIT
- WTP Instructors, Tutors, Residential Advisors
- WTP Alumnae

Questions?

WTP Program History

- Founded in 2002 by Doug Ricket (M.Eng in EECS at MIT, 2002)

  - Curriculum in Electrical Engineering, Computer Science, and Discrete Mathematics

- Directed since 2003 by Cynthia Skier, Department of Electrical Engineering and Computer Science

- Additional Curriculum Track in Mechanical Engineering added in 2006

Alumnae Testimonials

When I first came to WTP, I figured mechanical engineering was all about machines. I learned that mechanical engineering was much more broad, which has made me very excited about choosing it as a major. I also learned that "machines" are not as boring as I once thought - in fact, they're pretty cool. I also understand more of the creativity and problem-solving that has to go on behind the scenes of engineering, which really excites me. *(WTP-ME 2007)*

I loved the learning environment that is encouraged at WTP. I've learned so much not just from class lectures, but also from productive collaboration in a dynamic environment with some of my closest friends. I've found beauty in coding, in making circuits, and in building motors. I know which direction I want to go now, and I can't wait to learn more in the future. *(WTP-EECS 2012)*

Images via Women's Technology Program at MIT.

Learning Experience for Staff

Teaching for WTP was a wonderful experience. Compared to other teaching opportunities available to graduate students, the freedom to build my own curriculum was really rare and precious. The quality of the students was superb, and their enthusiasm was infectious. And I felt my leadership skills growing, both through the daily teaching itself, and through managing my teams of undergraduate tutors.
--WTP-EECS Instructor 2008, 2009

I learned through WTP that I enjoy teaching and making a difference in the girls' lives. I can't see myself teaching professionally, but I would love to be involved in something similar to WTP on the side in the future. *–WTP-ME Staff Member 2011*

Taking Things Apart

What We Took Apart:

Disposable Camera

Mavica Camera

Furreal Horse

Laptop

Furreal Dog
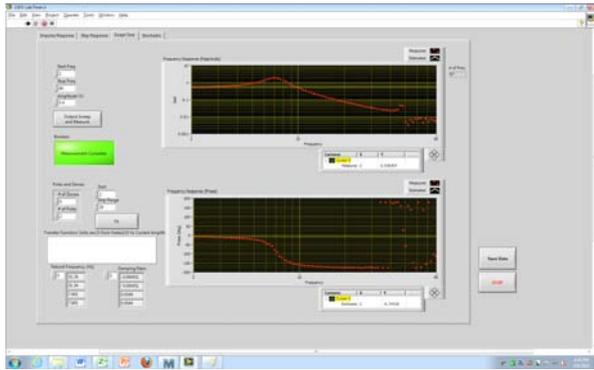
Desktop Computer

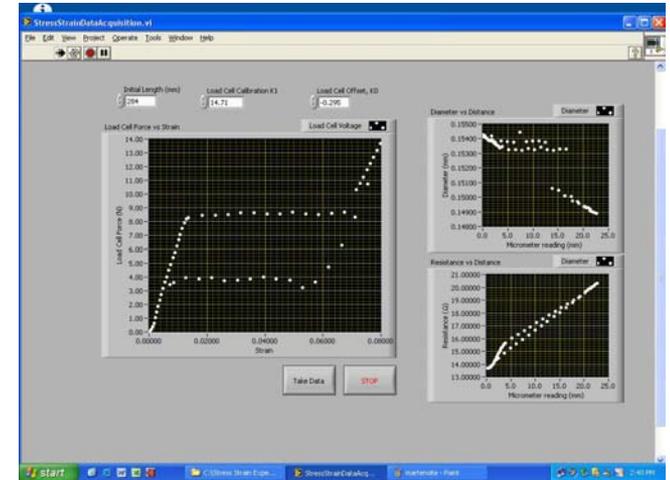CD/Cassette Player

Vacuum

Turntable

Printer

Images via Women's Technology Program at MIT.

Lab Experiments

Stability Control using PID

Laser Interferometry

Stress-Strain of Wire Samples

Images via Women's Technology Program at MIT.

Building and Testing Cranes

Images via **Women's Technology Program at MIT**.
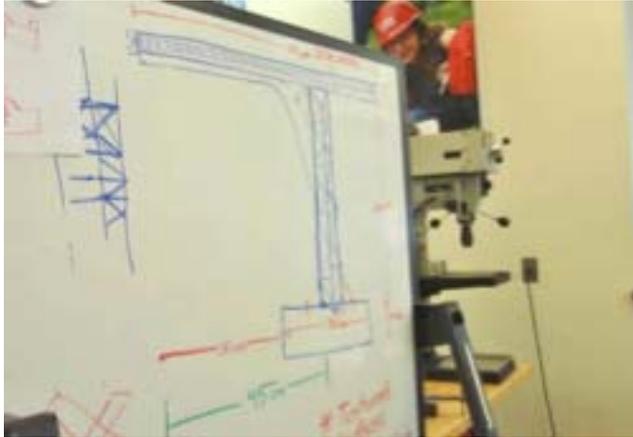
Airfoils: Design, Simulation, Testing

Images via Women's Technology Program at MIT.

Resource: Girls Who Build Cameras
Kristen Railey, Bob Schulein, Olivia Glennon, Leslie Watkins, Alex Lorman, Carol Carveth, and Sara James