



# Navigating a career as a *female* engineer

Ways to keep women in engineering



**ASM**  
INTERNATIONAL

# Why are we here today?

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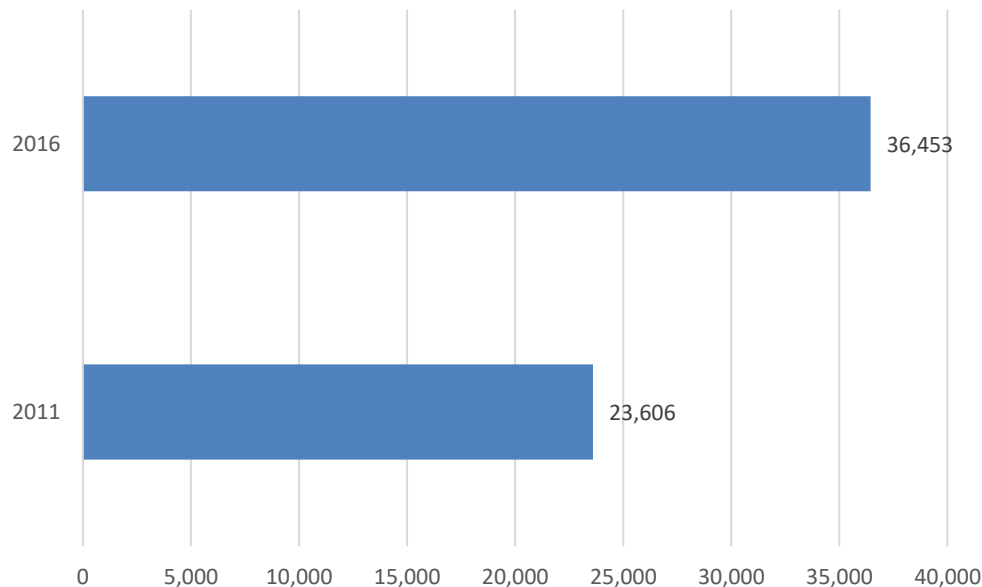
- To explore the challenges women face in the engineering industry
- To learn from women who have remained in engineering
- To keep women in engineering for the long haul

# The Good News



Colleges have done a lot of work in their engineering schools to promote diversity and inclusion, both among the students and faculty.

Engineering degrees awarded to women



**54%**

**increase in bachelor's degrees** awarded in engineering and computer science to women

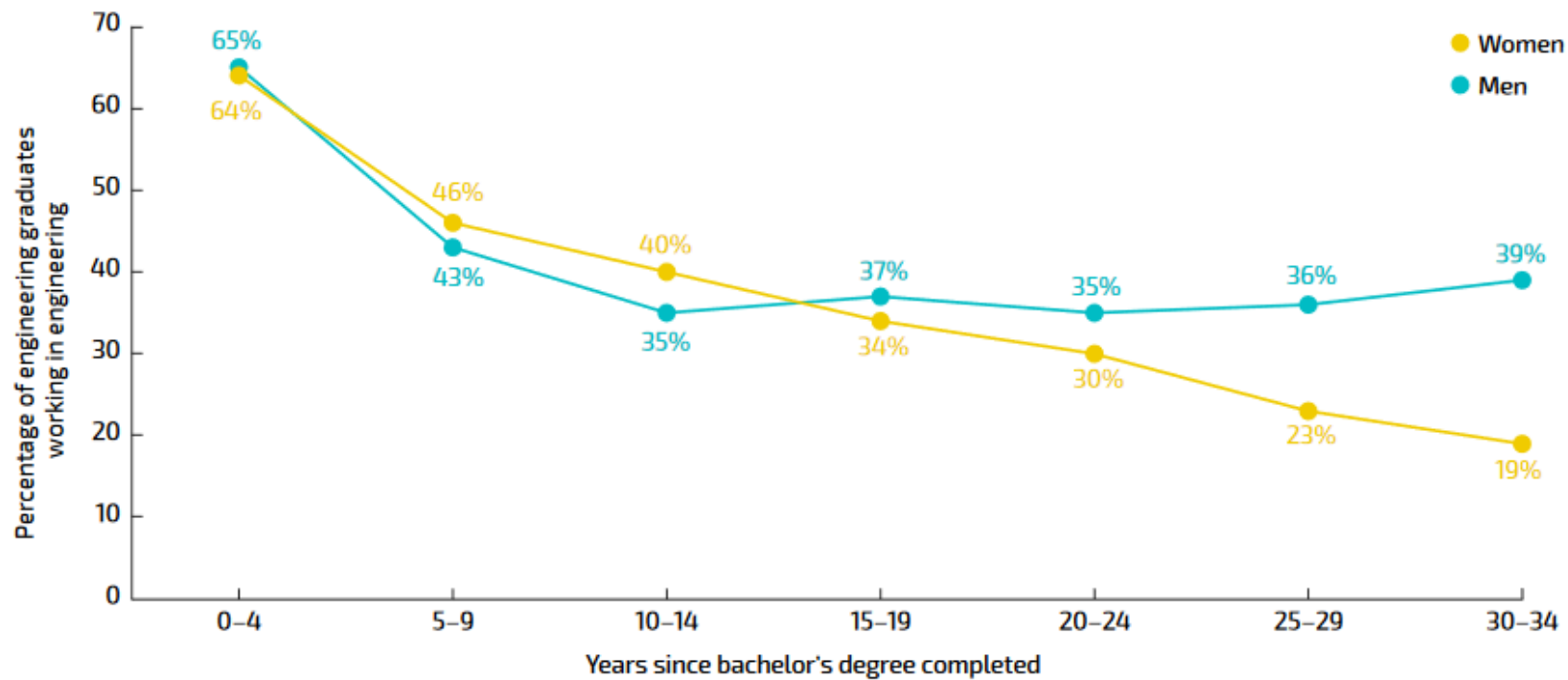
*U.S. Department of Education*



# The Bad News

The successes made in graduating more women with engineering degrees are not yet reflected long term in the workplace.

Retention in Engineering by Gender, 2010



# Why do they leave?

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## In studies of women who left engineering:

- Nearly half said they left because of working conditions, too much travel, lack of advancement or low salary.
  - Female engineers earn 10% less than male engineers
- One-in-three women left because they did not like the workplace climate, their boss or the culture.
- One-in-four left to spend time with family.

*Williams, J. C., Li, S., Rincon, R., and Finn, P. (2016). Climate control: Gender and racial bias in engineering?*  
*Fouad, N. A., Singh, R., Fitzpatrick, M. E., & Liu, J. P. (2012). Stemming the tide: Why women leave engineering. University of Wisconsin, Milwaukee.*

# Why do they leave?

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**61%** of women engineers report that they have to prove themselves repeatedly to get the same level of respect and recognition as their colleagues.

## Why do they leave?

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- Unsupportive climate
- Unsupportive supervisors and co-workers
- Organizational level barriers in the work environment (sexism, time demands, undermining)

*They don't just leave the company, they leave the engineering profession.*

# Why do they stay?

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- Women who have persisted in engineering perceive opportunities for training and development as well as interesting, challenging work.
- Have developed “professional role confidence” the idea that they can fulfill the roles, competencies, and identity required of engineers.
- They demonstrate self-efficacy and confidence in dealing with work related issues (initiative, controlling difficult situations, tackling tough technical problems, managing conflict)
- They describe career fulfillment in terms of effects on customers, co-workers, direct reports; enjoy helping solve problems.



# What can female engineers do?

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- Develop a support system
  - Stay in contact with academic advisors, professors, and the university's career services center.
  - Connect with colleagues and coworkers, mentors, and professional engineering associations (such as ASM).
- Work to overcome Imposter Syndrome
  - Accept praise, say "thank you" without dismissing your work.
  - Use the "I" framework instead of the "we" framework.
  - Show you did the work and take praise for it.
- Ask for regular reviews and feedback
- Don't be afraid to ask for the salary you deserve
- Speak up, ask questions

# What can male engineers do?

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- Listen to everyone, don't interrupt
- If you see inappropriate behavior, report it immediately
- Offer positive mentorship
- Share pathways to success
- Give credit where credit is due
- Be an advocate for your co-worker
- Provide encouragement and support
- Be inclusionary – engage with those that appear isolated
- Model supportive work-life policies and behavior

# What can companies do?

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- Recognize women's contributions and care about their well-being
- Develop a mentoring program
- Give valuable and constructive feedback
- Assign stretch/challenging assignments
- Provide specific pathways for advancement
- Encourage leadership and professional development opportunities
- Develop clear policies for flexible work options
- Have a plan for reintegration following family leave

# Breakout Discussion

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## Exercise 1:

Share an example of a time you had to overcome a bad workplace climate. What did you do? What's kept you in engineering?

## Exercise 2:

Do you feel you have to act a certain way to be accepted as 'one of the guys?' If you are male, have you seen female colleagues act this way? (for example, using foul language, shrugging off sexist jokes) What should women do in these situations?

## Exercise 3:

Have you experienced or seen others face discrimination or bias at work? How did you handle it?

# Breakout Discussion

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## Exercise 4:

Discuss one of the following quotes:

“At my last engineering job women were fed up with the culture: arrogant, inflexible, completely money-driven, sometimes unethical, intolerant of differences in values and priorities. I felt alienated, in spite of spending my whole career TRYING TO ACT LIKE A MAN.”

“The pressure is intense, and with no viable part-time alternatives, a woman [engineer] is FORCED TO CHOOSE between work and family.”

“Most of management is a male-dominated culture (male conversation topics, long hours, demanding lifestyle, career-focused expectations). ... Women usually choose to leave WITHOUT FIGHTING THE UPHILL BATTLE to make improvements. It is a self-sustaining cycle!”

# Final Thoughts

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The desire to leave engineering stems from role-related pressures, hostile climate, job dissatisfaction, inadequate training and development opportunities, and lack of advancement opportunities.

The representation of women in engineering matters. This is not just a “woman’s issue.”

Women’s experiences, along with men’s experiences, should inform and guide the direction of engineering and technical innovation.



# Contact us



Get involved with the ASM Women in Materials Engineering committee

Visit: [www.asminternational.org/wime](http://www.asminternational.org/wime)

to learn more about  
our events and webinars,  
how we can help with ASM  
award nominations, and to  
find a list of research papers  
related to retention.







Thank you