

Navigating the Professoriate : Women in Engineering Education

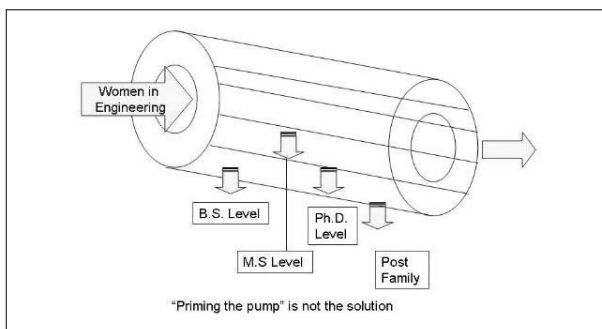


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President, American Ceramic Society
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- President, American Ceramic Society 2006-07
- Scientific Advisory Committee of the Advanced Photon Source at Argonne National Lab, 2005
- Fellow, ASM International, 2003
- ISI Highly Cited in Materials, 2002
- NSF Creativity Extension Award, 2001-2003
- YWCA Achievement Award for Education, 1997
- Member, Academy of Ceramics, 1996
- Distinguished Educator Award, Society of Women Engineers (SWE), 1995
- Vice president, ACerS, 1992-93, 1994-95
- Fellow, ACerS, 1992
- President, Ceramic Educational Council, ACerS, 1989-90
- Ralph A. Teetor Award from the Society of Automotive Engineers, 1989
- NSF Presidential Young Investigator Award, 1984-89
- AT&T Foundation Award from the American Society for Engineering Education, 1986
- IBM Faculty Development Award, 1984

■ The Leaky Pipeline



■ What to do?

- Transform our institutions of higher education
 - Hiring practices

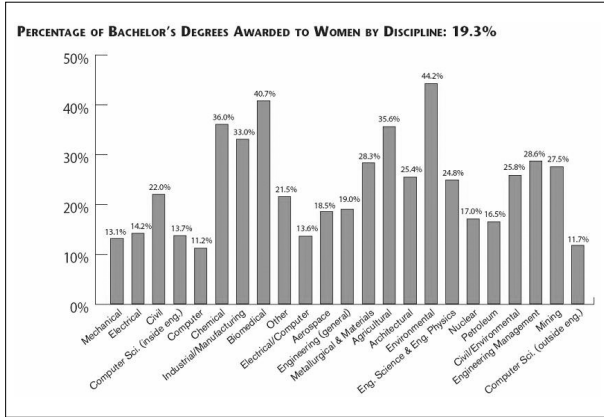
- Tenure and promotion procedures
- Family friendly policies
- Awards
- Train female leaders
- Future faculty preparation
- Navigating workshops
- Mentoring and networking groups
- Using other parts of the university

■ Topics

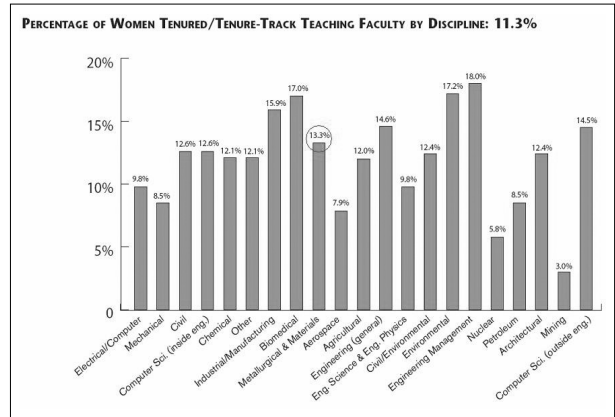
- Women in Engineering Education in the U.S.
- National Science Foundation Activities
 - ADVANCE Program
- Northwestern University Activities

- Navigating the Professoriate
- Preparing Future Faculty/

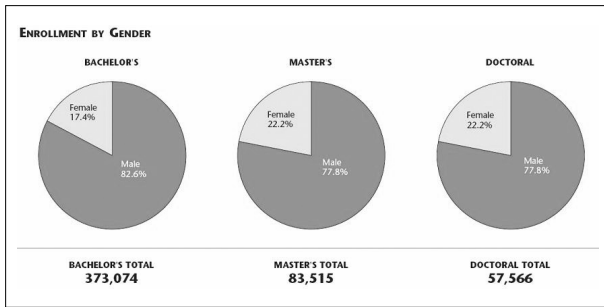
■ Engineering Enrollments



■ Engineering Faculty by Gender

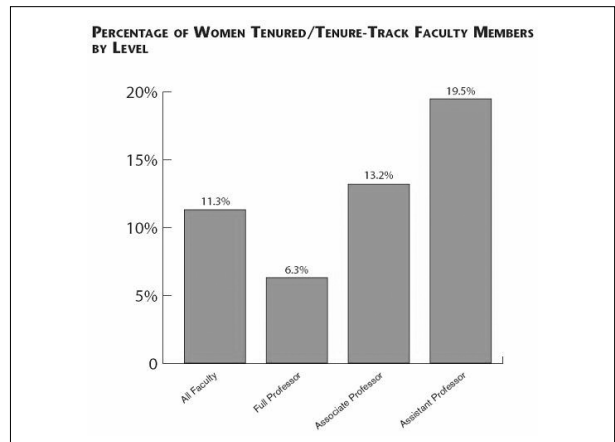


■ Enrollment in B.S., M.S., and Ph.D. Programs

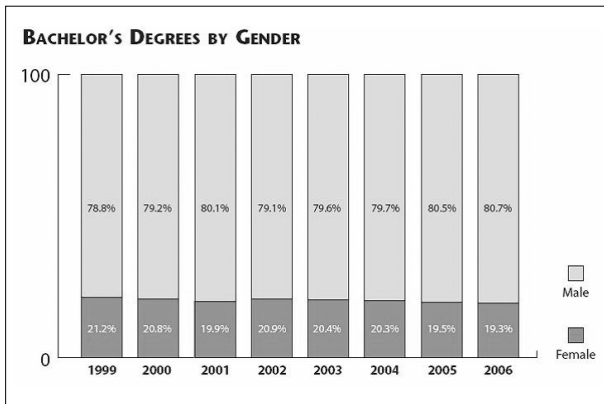


■ Female Faculty by Rank

Is there a complacency effect?



■ Enrollment: 1999 through 2006



■ ADVANCE at the National Science Foundation

▶ Program Goal:

Increase the participation and advancement of women at all levels in academic science and engineering careers

▶ Funding Mechanisms:

- Institutional Transformation (IT) - over 5 years, 2 to 5 mil USD
- IT Planning Grants (IT Start) - over 2 years, 200k USD
- Partnerships for Adaptation, Implementation and Dissemination (PAID) - 1 to 5 yr, variable funding

Navigating the Professoriate : Women in Engineering Education

► Program Directors:

- Jesse DeAro - jdearo@nsf.gov
- Laura Kramer - lkramer@nsf.gov

■ ADVANCE Contributions

1. Awardeeshavecontributedtopolicies,practices,and-products

- Research and training on implicit bias
- Work with institutional leadership to identify issues and develop action plans
- Enhances the professional lives of faculty women, reduces attrition, and increases advancement
- Faculty development funding
- For example: travel funds to visit an external mentor; seed grant for collaborative research project
- Development, adaptation, and implementation of mentoring programs
- Effective mentoring improves retention and advancement of faculty at all levels

2. Awardeeshavecontributedtopolicies,practices,and-products

- Personnel policy changes and increased transparency
- For example, tenure and promotion decision-making process, tenure-clock stop policies; equitable allocation of teaching/service work
- Program and policy development to enhance work life/social life balance
- For example, addressing the “two body problem”; part-time tenure track positions
- Knowledge-sharing
 - <http://www.nsf.gov/crssprgm/advance/itwebsites.jsp>
 - <http://research.cs.vt.edu/advance/index.htm>

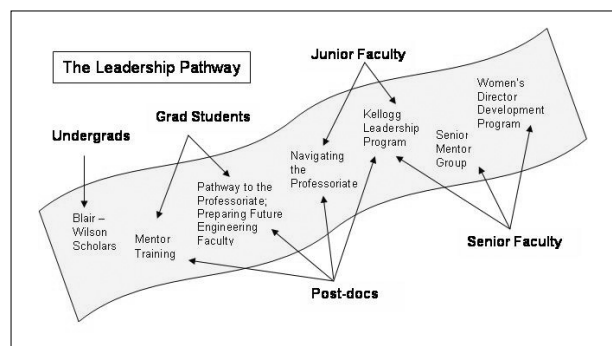
■ Example of ADVANCE Successes

- Search Committee Training at the University of Michigan
 - Each committee trained to watch for bias in letters (e.g., “solid” vs. “innovative”; “local” vs. “international”), trained to not ask personal questions, etc.

• NSF Advance Professorships at Georgia Tech

- Four senior women hold NSF ADVANCE Professorships. Each faculty member receives annual funds for five years to support her research and leadership activities to advance women in her respective college, and Institute-wide.

■ Northwestern University Activities



■ Navigating the Professoriate

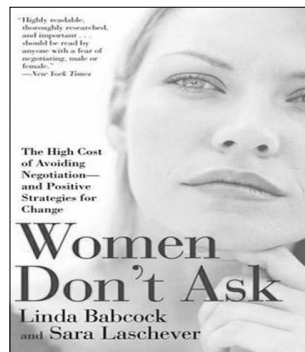
- Objective: Enhance the professional and career advancement opportunities for the next generation of women science and engineering faculty leaders through direct networking and specialized skill training
- Six sessions over five months, each 3 hours
- All pre-tenure, tenure-track women in sciences and engineering invited to attend (pool ~ 60)
- Presenters were senior female faculty and administrators
- Each session evaluated by participants
- Negotiating: Asking Effectively for Yourself
- The Tenure Process, University Service and Structure
- Mentoring and Management Skills for Scientists and Engineers
- Grantsmanship and Identifying Funding Opportunities
- Expanding Your Network to Create Opportunities and Gain Information
- Teaching and Learning in High Education in the STEM

Disciplines

- Negotiating: Asking Effectively for Yourself
- The Tenure Process, University Service and Structure
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- Teaching and Learning in High Education in the STEM Disciplines

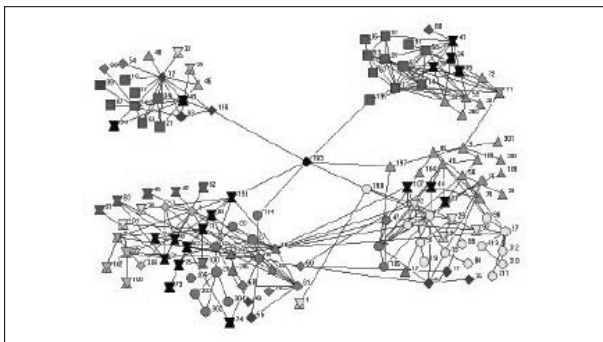
■ Negotiating

- Women, in general, avoid negotiation and are poor negotiators.
- Women, in general, assume they are being treated fairly.
- Presentations focused on strategies for negotiating
- “Multiple equivalent options”
- “Everything is negotiable”



■ Building Your Network

- How to establish a network
- Are the right people in your network?
- How does your network function?
- How to use a network?



■ Pathway to the Professoriate/Preparing Future Faculty

- Lunchtime sessions for graduate students and post-doctoral fellows
- Designed for males and females
- Presenters include engineering and science faculty
- Selecting the Right Post-doctoral Appointment
- Grants: Funding During the Postdoctoral and Faculty Years
- Research and Publishing
- Technology Transfer
- Faculty Job Search and Start-up Packages
- Lab Management, Mentoring, and Leadership
- Successfully Balancing a Faculty Career and Family
- Teaching
- Service and Committee Work
- The Tenure Process
- Issues for and about Women and Minorities
- Non-tenure Track and Alternative Faculty Positions
- Post-doc Peer Advice
- Long-term Success: Stories from the Emeritus Faculty

■ Closing Remarks

- Two pronged approach needed: institutional transformation and training
- NAS, NAE, IOM: Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering
 - Major study on women on women in science and engineering, 2005-2006
 - Recommendations for university presidents, provosts, deans, departments chairs, funding agencies, journal editors, etc.
 - <http://lab.nap.edu/nap-cgi/discover.cgi?term=beyond%20bias&restric=NAP>
- Scientific and engineering excellence requires the talents and innovation of all.