

# Recruitment and Retention of Women & Minorities in Computer Science and Information Technology

**women & minorities are significantly  
underrepresented in CS programs ...**

*possibly less so in IT programs but we're still far  
from achieving equitable representation*

# Why should society care?

- Under-representation translates into
  - loss of individual opportunity
  - Loss of talent to the workforce
  - loss of creativity in shaping the future of society
- Uniformity leads to inability to react to change, and ultimately to extinction
- Diversity is the raw material of novelty, innovation and evolution

# Why should our universities care?

- Our business is the pursuit of excellence in research & teaching
- Lack of diversity is bad for business, both in academia and industry
- Diversity in academia leads to multiple perspectives needed for personal and institutional creativity and innovation

# Recruiting women & minorities

... increasing the numbers

- Broaden the criteria used in admissions
  - explicitly include diversity considerations
  - encourage and facilitate transfer and reentry students
- Don't require advance training in programming
- Be proactive in contacting potential minority & women students
  - outreach to improve the applicant pool
  - call minority & women applicants to improve yield
- Enhance the public image
  - actively counter negative stereotypes and misperceptions
  - advertise your unique and broad perspective on the field

# Recruiting women & minorities

... specifically for graduate school

- Review all publications for any material that might discourage women or minority applicants
- Cultivate undergraduates for a research career
  - provide exposure and opportunity
- Communicate the opportunities an advanced degree offers
- Prepare students for graduate school
  - give individual encouragement to women & minorities

# Recruiting women & minorities

... specifically for graduate school

- Broaden the recruitment pool beyond students with the traditional backgrounds
  - be proactive in making recruiting contacts
  - make sure admissions criteria accurately reflect success factors
- Seek out new sources of women & minorities
  - partner with women's colleges and minority-serving institutions

# Retaining women & minorities

... facilitating early success

- Provide bridging opportunities, especially for non-traditional students
- Place strong teachers in introductory and preparatory courses
- Diligently advise (one-on-one) and mentor
  - especially entering non-traditional students
- Integrate students into the research culture ASAP
- Build peer communities and foster a sense of belonging

# Retaining women & minorities

... provide an environment for success

- Review all publications for any material that might discourage women or minority students
- Provide relevant role models
- Broaden the culture to accept a range of personal choices in work-life balance
  - implement family-supportive policies
- Promote professional societies
- Standardize information delivery, rather than relying on informal networks



# Recruiting and Retaining women & minorities

- Perform a self-assessment of your strengths and weaknesses
  - collect tracking data
    - applicants, admissions, support, retention, time-to-degree, employment
  - build self-awareness
- Prioritize needed improvements
- Publicize your successes

# Recruiting and Retaining women & minorities ... curriculum

- UCI/SICS is proposing a new CS/Informatics curriculum that address issues of
  - Focused program rather than disparate classes
  - Ties to realistic problems
  - creative problem-based exercises
  - Collaborative, team-based learning
  - Service-oriented give back to community
  - Integrated specializations with social impact and interdisciplinary ties to education, medicine, arts, psychology, ...

# Recruiting and Retaining women & minorities ... curriculum

- Survey of our current majors and alums revealed
  - 41% of all polled students would rather have an Informatics degree than a CS degree, and another 29% were undecided
  - 78% of all polled students agreed that UCI should establish an Informatics degree program, with 18% undecided
  - 50% felt an Informatics degree would better prepare them for the type of employment they would like to pursue
  - women felt stronger about the Informatics degree program than men: 48% of women would prefer an Informatics degree as opposed to 38% of men, and 85% of women as opposed to 76% of men believe ICS should establish an Informatics degree program (unfortunately, we did not poll for ethnicity)

# What about Women & Minority Faculty?

- Under-representation on the faculty
- Leaky pipeline
- Lack of role models
- Chilly climate
- Profession not seen as family friendly

*NSF ADVANCE program is helping to address this need in the Sciences generally*

# What is ADVANCE at UCI?

- \$3.45M NSF funded program
- Matching funds from UCI
- To address gender inequities in academia, especially in the sciences, by increasing
  - Recruitment
  - Retention
  - Advancement

# What are ADVANCE & UCI doing?

- Equity Advisors in each School
  - best practices for search committees
  - mentoring for junior and senior faculty
  - awareness and informational workshops
- Leadership from the top down
- Surveys to develop quantitative and qualitative indicators of equity
- Career partner program
- Workshops and seminars
- Outreach with hands-on-science to K-12
- ADVANCE Chairs - unique to UCI
  - for outstanding scholars committed to gender equity

# What are ADVANCE & UCI doing? Recruitment Strategies

- ADVANCE Brochure
  - Best Practices\*
  - Readings
- OEOD Brochure
  - Affirmative Action Obligations
  - Nondiscrimination in searches
- Career Partner Program
- Plan and Advertisement Form

# Best Practices for Achieving Diversity: Search Committee/Department

- Be aware of recruitment history and official goals
- Advertisement should be as broad as possible
- Identify professional societies, grad programs, web sites and list servers for specified groups
- Encourage personal contact with colleagues
- Consider non-ladder rank academics (lecturers, professional researchers and postdoctoral fellows) as potential candidates



# Best Practices for Achieving Diversity: Search Committee/Department

- Short list to be appropriately diverse relative to the pool
- Interview with emphasis on research and teaching performance & goals, and less on former institution
- Be aware of gender based perceptions (e.g., in letters of recommendation)
- Focus on substance, *not* style -  
evaluating intellectual curiosity, dedication & perseverance,  
*not* assertiveness and single-minded independence
- Understand own biases and unconscious preferences

# Best Practices for Achieving Diversity: Administrators

- Selection and evaluation of Deans / Chairs should include commitment and effort to promote diversity
- Select search committee with diverse membership, if necessary include underrepresented faculty from other appropriate departments
- Consider lightening the load of underrepresented faculty members in the areas of service and or teaching in order to insure they are not over burdened
- Make committee members aware of labor-intensive, proactive role in a successful search
- Provide search committee with recruitment manual offering State and Federal laws and resolutions

# Best Practices for Achieving Diversity: Administrators

- Discuss need for proactive recruiting and the desirability of achieving faculty diversity
- Be aware of areas in which women and minorities are well-represented when choosing the area in which to recruit
- When possible, cluster hire – several positions in broad area leads to larger pool
- Be aware of variable negotiations styles and the need to be flexible in the hiring process with final candidate
- Determine individual candidate's needs, such as salary and set-up, career partner position, childcare, housing, etc.

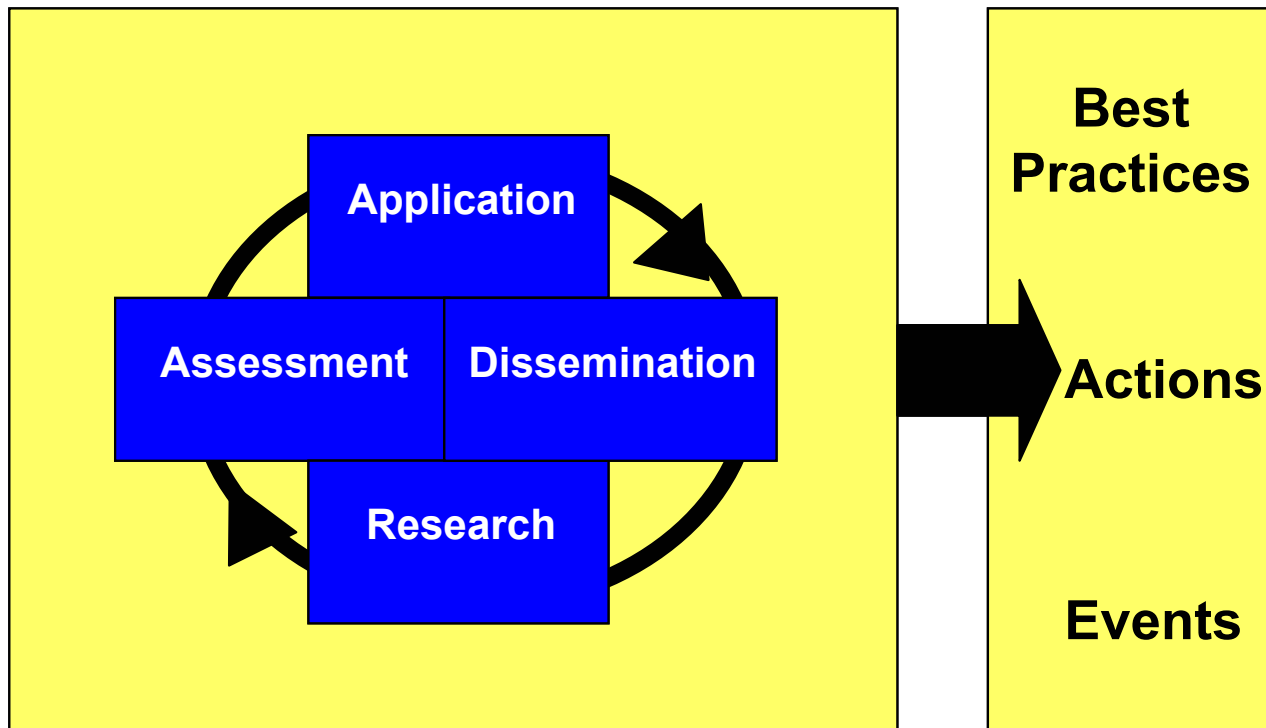
# Recruiting and Retaining women & minorities at all levels

- Diversity is a matter for everyone
- These recommendations help all students
- Build programs to last
- Seek out industrial advice and funding

***Long-term, institutional change is needed!***

# National Center for Women and Information Technology ... mission

*To ensure that women participate fully in the influential world of information technology*



# National Center for Women and Information Technology ... goals

- **Parity** *achieve parity (equal participation for women and men) within 20 years*
- **Diversity** *ensure the inclusion of girls and women from all racial, cultural, and socio-economic backgrounds*
- **Coverage** *ensure participation at all levels of the education and workforce pipeline: K-12, undergraduate and graduate study, and career advancement*
- **Innovative Methodology** *use a systematic, measurable approach to find what works, reuse it, and enhance existing programs*
- **Leadership** *be the recognized authority on best practices and policy-shaping*

# National Center for Women and Information Technology ... priorities

- **K-12 Students** *stimulate girls' interest in and encourage a positive image of information technology*
- **Undergraduate Students** *encourage majors in IT fields, develop appropriate curricula, and target re-entry students*
- **Graduate Students** *employ recruiting, mentoring and retention programs*
- **Faculty** *promote women in academic leadership and mentoring positions*
- **Professionals** *promote workplace stability and equity and connect women from the education pipeline to the workplace*
- **Society** *raise visibility of women as producers and consumers of technology*

# National Center for Women and Information Technology ... structure

- Distributed group of partners - “hubs” - autonomous, independent agents committed to center’s mission
  - Academic institutions
  - Industry programs
  - Professional groups
  - Outreach organizations
- Working together through center network
  - Center’s core is a lightweight administrative body responsible for unifying activities and support



# National Center for Women and Information Technology ... structure

- Core
  - University of Colorado Boulder (Bobby Schnabel & Lucy Sanders)
  - with support from IWT (Telle Whitney)
- Hubs
  - Institute for Women and Technology
  - Girl Scouts of America
  - Computing Research Association
  - University of Colorado
  - Georgia Institute of Technology
  - University of California (Irvine & Berkeley)