Women in Science and Engineering

supporting persistence and excellence of Women in STEM at Syracuse University

Marina Artuso, Syracuse University
For the WiSE group

Thanks to S. Bhatia, K. Ruhlandt (faculty directors) and S. Alestalo (program director) and S. Wyatt (program assistant)
WiSE by program

- Undergrad
  - Slepecky Research Prize
  - Women of Color in STEM
  - Research Emphasis

- Graduate & Post-Doc
  - WiSE–FPP
  - Post-Doc Mentoring
  - Open Programs

- Faculty
  - Lunch & Learn
  - Faculty-2-Faculty
  - Networking
Some key points of the program

- Program focuses on women in STEM from freshman to faculty
- Provides community linking and bridging opportunities:
  - Links across disciplines (15 departments)
  - Links across career stage, encouraging formal and informal networking across and up & down the ladder.
Faculty recruitment and retention

Undergraduate students

Graduate students

Postdocs

PROGRAM TIMELINE

1999-2003

2004-2007

2008-2012

2013 - 2017

Faculty Networking Events

Women Scholar Lecture Series

Slepecky Endowment results in Undergraduate Research Prize & Memorial Lecture

WISE Learning Community (New)

Student & Faculty Experience Assessment

WISE Learning Community (New)

Slepecky Prize & Lecture

WISE-FPP

Pilot Post-Doc

Faculty Peer Mentoring & Development

Faculty & Student Networking Events

Assessment & Scholarship

NSF ADVANCE IT awarded, 2010

Post-Doc

Faculty-2-Faculty Peer Mentoring Prog and support to SU ADVANCE

Assessment & Scholarship

Networking & Community Building

WISE-FPP (growth) and open programs for Graduate Students in STEM

Slepecky Prize (25 total) & Lecture

Faculty recruitment and retention
WiSE faculty program

- Faculty “Lunch and Learn” series, for professional development led by a peer expert. Examples of topics are social media, journal impact factors, conflict management, communicating science and career awards.

- Faculty-to-faculty events: Women faculty mentor each other over topics of concern such as annual reviews, strategies for keeping your CV updated, student evaluations, large classroom management and effective syllabus.

- Augmented with SU Advance (NSF grant focused on promoting inclusive university environment, through higher % of women faculty, and women faculty leadership)
Increase in women faculty

Percentage of Full Time Women Faculty in STEM

- **NOV. 2013**
  - Engineering and Computer Science: 17%
  - Arts & Sciences: 26%

- **NOV. 2008 (PRE-SU ADVANCE)**
  - Engineering and Computer Science: 11%
  - Arts & Sciences: 17%

- **1997 (PRE-WISE)**
  - Engineering and Computer Science: 6%
  - Arts & Sciences: 9%
# Filling the mentoring gap

## Table 1: Percentage of Women in STEM – Freshmen to Faculty

<table>
<thead>
<tr>
<th>Department</th>
<th>% of Fulltime Women Faculty (2014)</th>
<th>Percentage of Enrolled, Full-time Women Undergraduates (Fall 2014)</th>
<th>Percentage of Full-Time Graduate Women (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>35%</td>
<td>67%</td>
<td>74%</td>
</tr>
<tr>
<td>Communication Sciences &amp; Disorders</td>
<td>93%</td>
<td>95%</td>
<td>91%</td>
</tr>
<tr>
<td>Chemistry/Biochemistry</td>
<td>16%</td>
<td>52%</td>
<td>42%</td>
</tr>
<tr>
<td>Earth Science</td>
<td>31%</td>
<td>49%</td>
<td>67%</td>
</tr>
<tr>
<td>Mathematics/Statistics</td>
<td>21%</td>
<td>49%</td>
<td>37%</td>
</tr>
<tr>
<td>Physics (Physics BA,BS, MS, PhD, Bach Biophysical Science)</td>
<td>14%</td>
<td>28%</td>
<td>12%</td>
</tr>
<tr>
<td>Psychology</td>
<td>39%</td>
<td>77%</td>
<td>75%</td>
</tr>
<tr>
<td>Biomedical &amp; Chemical Engineering</td>
<td>20%</td>
<td>44%</td>
<td>39%</td>
</tr>
<tr>
<td>Civil &amp; Environmental Engineering</td>
<td>16%</td>
<td>26%</td>
<td>34%</td>
</tr>
<tr>
<td>Electrical Engineering &amp; Computer Science</td>
<td>15%</td>
<td>13%</td>
<td>26%</td>
</tr>
<tr>
<td>Mechanical &amp; Aerospace Engineering</td>
<td>10%</td>
<td>14%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Data Sources: For faculty, SU ADVANCE, Four Year Report/Spring 2014; Student data primarily prepared from OIRA Fall Census Reporting plus ASEE Graduate Engineering Survey Data, 2014; and ECS Student Enrollment Records Office Fall 2014 Undergraduate Report. Undergraduate figures do not include undeclared students. The interdisciplinary programs are also not included (Biomedical Forensic Sciences; Biotechnology; Forensic Science; Neuroscience; and Structural Biology)
Programs for undergraduate women in STEM

Emphasis on engaging young women in STEM in research

Additional activities:
- Learning communities for first year students
- K-12 outreach:
  - Communication skills
  - Complete “pipeline” by providing role models to young girls interested in STEM

In Memory of Norma Slepecky
Faculty Member and Auditory Neuronomist

Brings Prominent Women in STEM to Syracuse University

30 Awards for Excellence in Undergraduate Research
In the period 2007-2015 WiSE-FPP involved:
- 129 doctoral women in STEM from 19 different SU departments and 4 ESF (Environmental Science and Forestry) departments
- Students selected through faculty nomination process
- 93% persistence rate
- All the activities in the program are rated very highly but students.
WISE FPP philosophy and activities

- Program developed in collaboration with the Graduate School
- Some activities only open to women engaged in the program, others are open to GS of any gender
- Example of activities:
  - Strategies for success (1st year)
  - Job search preparation workshops:
    - CV/Resume Writing
    - CV/Resume feedback session
  - Mock job-interview

More recently graduate student organization sponsored workshop
**Excelling at communicating your science** (how to address media/public + writing skills)
Example of WiSE FPP program 2015-2016

WiSE-FPP Specific Programs for Associates
- Writing Workshop with Dr. Laura VanderDrift
- Intercultural Communication with Intergroup Dialogue Facilitators and Dr. Gretchen Lopez
- Gender and Communication Dinner and Discussion
- Flash Talk Preparation with Dr. Jay Henderson
- Portfolio Preparation with Drs. Shikha Nangia and Qinru Qiu
- Design Thinking Lunch & Learn (Postdocs and Grads) with Drs. Tracy Brandenburg and Burak Kazaz

Networking with Women Scholars and Researchers
- Dr. Jennifer Slimowitz-Pearl, National Science Foundation – Math Division (Post Docs and Grads)
- Dr. Karen Daniels, Professor of Physics at NC State University
- Mary Roach, Author and University Lecturer
- Mina Hsiang, US Digital Service at the White House
- Dr. Deborah Goldberg, Elzada U. Clover Collegiate Professor, University of Michigan

In addition programs open to all graduate students
Goal: create a community & promote professional development and awareness of career options
Conclusions

- The WiSE program at Syracuse University has grown over almost two-decades into a broad portfolio of initiatives that address the needs of women in STEM at all the stages of their education/career.
- The program evolved on the basis of a rigorous assessment of outcomes for all the activities organized.
- The more diverse environment is inspiring several more targeted initiatives (recently we have started a SU women in physics group!)
For more information: http://suwise.syr.edu

The End
STEM Departments
Biology
Biomedical & Chemical Engineering
Chemistry
Civil & Environmental Engineering
Communication Sciences & Disorders
Earth Sciences
Electrical Engineering & Computer Science
Exercise Science
i-School
Mathematics
Mechanical & Aerospace Engineering
Physics
Psychology
Science & Math Education

Programs

Undergraduate: WiSE Women of Color in STEM Mentoring Group and Norma Slepecky Undergraduate Research Prize

Graduate Students: WiSE Future Professionals Program and First Year Graduate Women in Engineering.

Post Doc Mentoring Program: professional development and networking events

Faculty Peer Mentoring: Lunch & Learns; Faculty-2-Faculty; Networking events; and supporting SU ADVANCE.

Campus: Visiting Women Scholars; Open professional development programs for graduate students in STEM; Open research focus programs for undergraduates in STEM)

Community Outreach: Pipeline development through support of K12 activities.