
Community Building: Bridging Boundaries & Forming Connections

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Special Thanks to:

- **Colleagues in Physics Department**
- **Residence Life Staff**
 - Nicole Raney, Head Resident,
WIMSE**
 - Chuck Leonard, Theme Learning
Facilitator**

A Question:

**Are there significant boundaries
for women undergraduates?**

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- **Women have been actively recruited by the sciences for the past 20 years**
 - **Women are still underrepresented at all levels**
 - **Conditions for women, in large part, have only changed incrementally**
 - **Recruitment of women in the absence of retention is insufficient**

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- **Greatest loss of women in SME occur in the First and Second years**
 - **Barriers to retention include:**
 - **Lack of self-confidence in scientific ability**
 - **Not being accepted into department**
 - **Feeling intimidated**
 - **Isolation**

Boundaries...

- **Clearly significant boundaries to women's success --**
- **Can these be bridged?**
- **Will forming connections help create a foundation to build on?**

Really, a simple question...

**Can women and minority students
find community?**

Bridging boundaries & forming connections

- **Community building in the physics department**
 - Forming connections *on all levels* within the department
- **Community building beyond physics**
 - Bridging disciplinary lines to form connections

Community building within Physics Departments

- **One-on-One**

- Mentors
- Friends
- Teachers

- **Groups**

- Class cohorts
- Study groups
- Research groups
- SPS

Miami University's Physics Department – a few highlights

Some enrollments ...

Year	BS Physics	BS Eng Physics	BA Physics	Men	Women	Dept. TOTAL
1994-95	10	7	3	13	7	20
1995-96	9	7	1	12	5	17
1996-97	4	9	1	10	4	15
1997-98	9	3	3	12	3	15
1998-99	3	7	2	10	2	12
1999- 2000	8	4	0	8	4	12

Physics Faculty & Graduate Students

- **Faculty - 15 full time, 2 visiting**
 - **Women - 2 full time, 1 visiting**
 - **Persons of Color - 1 full time**

- **Masters Students - 15 full time TAs**
 - **Women - 3**
 - **Persons of Color - 3**

Strong Commitment to Teaching

Excerpts from the “Statement of Effective Teaching”

- Student learning is the most important responsibility
- The goals of physics teaching are to guide and facilitate student understanding ...
- To ensure equity ...
- Treat one another and their students with the respect due colleagues in the academic enterprise

Small Classes



- **First Year Classes - 20 per section & taught by full time faculty**
- **First Year Labs taught by TAs and UAs**
- **Second Year Onward taught by full time faculty - even labs**

Open Door Policy

- Faculty are readily available even outside of scheduled office hours(!)



Group Work is Encouraged

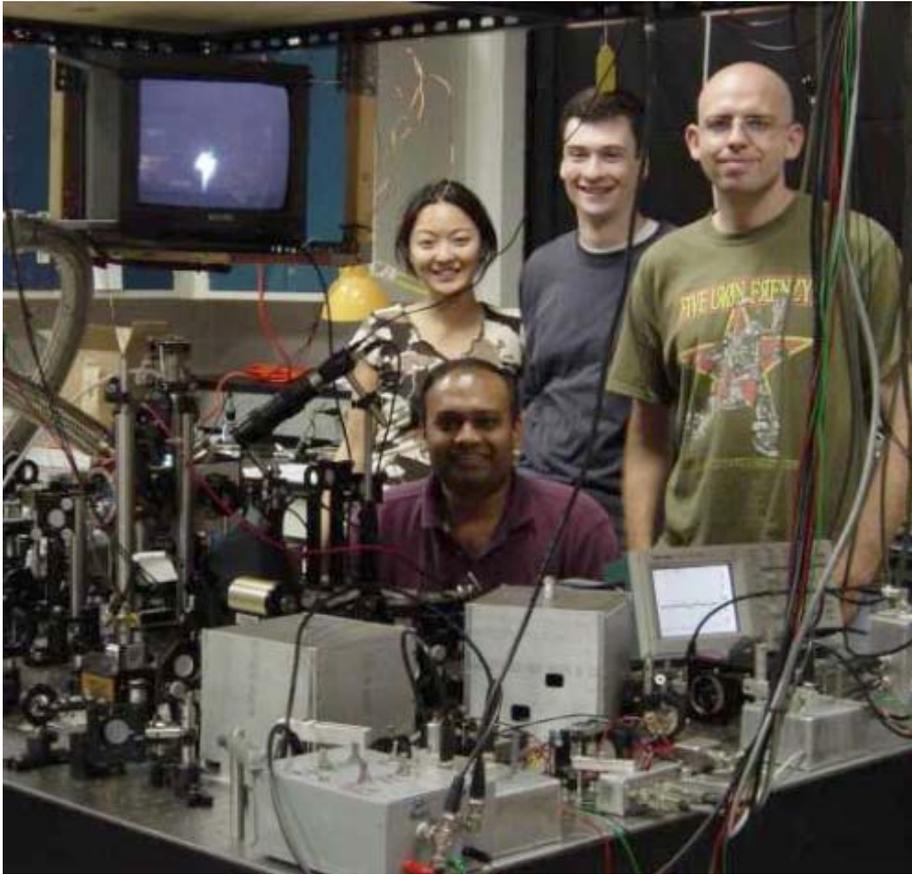


- Homework groups
- In-class small group work
 - Mini-experiments
 - Tutorials
 - Discussions
- Projects
- Presentations

Research

- **Undergraduate research is encouraged and supported by all faculty**
- **Students join a lab as early as their first year**
- **Often students are supported financially during summers**
- **Small communities are formed between undergraduates, graduate students, & faculty**

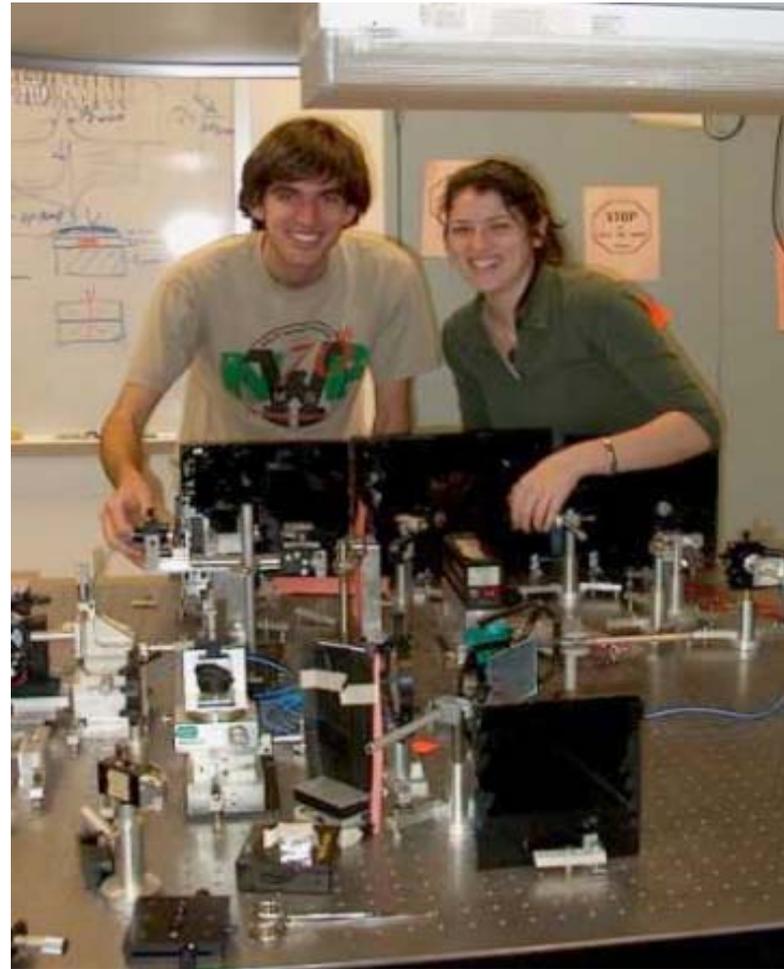
Samir Bali's Lab



- **Quantum Optics**
 - Atoms trapped in MOTs and Lattices
- **Studies quantum properties of emitted light**
- **2 undergrads, 1 grad**

Jan Yarrison-Rice's Lab

- **Near Field Scanning Optical Microscopy**
 - Study photonic band gap structures
- **Obtain spatial light distribution on nanometer scale**
- **2 Second Year students & 1 Senior**



Gatherings

- **UG and Gs congregate in *common spaces***
- **UAs and TAs form mentoring relations**
- **Research groups go to lunch together on regular basis (both students and faculty)**
- **Annual Student/ Faculty Retreat -- student input on agenda**

Gatherings (cont.)

- **Semi-annual Picnics for full department & families**
- **Annual Dinners with the Chair for each class**
- **UG and G representative at weekly faculty meetings**
- **End of semester celebrations**

Outreach to Alumni

- **Yearly Newsletter**
- **Periodic Survey of Alumni**
- **Highlighting Alumni Successes on Departmental Website**
- **Invitations sent to alumni for all special speakers**

Alumni Respond

- **Bring Alumni back to give seminars (2-4 per year)**
- **High percentage of survey returns and visits by alumni**

A strong department will



- Foster an excitement for physics
- Create a supporting & sharing atmosphere
- Celebrate the strengths of each individual
- **Facilitate bridges and connections**

Community Building *beyond* Physics

- *Bridge* traditional discipline boundaries

&

- *Form connections* with other women in related fields

Miami's Women in Mathematics, Science, & Engineering -- *WIMSE* Program

- **Founded 1991, with small monthly meetings**
- **Now a theme learning community, part of the residence hall programming**

Goals of *WIMSE*

- **A living learning community**
- **Women live together, learn together, & explore their futures together**
- **Women also socialize with each other, support each other, & study together**

Connections and Bridges



- **Reaching across fields**
 - Other UG women in MSE majors
- **Looking forward**
 - Grads & Faculty on campus
 - Other professional women
- **Giving back**
 - Sponsoring events for K-12 women

Advisory Structure of *WIMSE*

- **Faculty Advisor**
 - Jan Yarrison-Rice
- **Advisory Committee**
 - Women faculty
- **Residence Life Staff**
 - Head Resident
 - Facilitator
 - RAs
- **Residents**
 - 1st Years & Upper Level



Women in residence

Academic Year	First Year Women	Upper Level Women
98/99	28	NA
99/00	50	15
00/01	45	26
01/02	38	23
02/03	34	15

- Academic

- Careers

- Social



Programming

Academics

- **First Year Seminar each Fall**
 - Ethics & Science
 - Based on Scientific Integrity by Francis Macrina, ASM Press, 2000
- **Weekly Study Sessions**
 - Calculus, Chemistry, & BMZ
- **Mentoring**
 - Informal and Formal
 - Senior students to juniors & Faculty to students

Social Events



- Faculty Dinners
- Group Dinners
- Receptions
- Lunch with Grad Students
- Clogging

Career Advice

- **Programs with Grad Students -- selection of schools, advisors, and research topics.**
- **Programs with faculty describing their career paths**
- **Partnership with Proctor & Gamble's Women in Science Group**

WIMSE



Advantages

- “Not the only one”
- Ability to find a support person

Downside

- Are we weak?
- Is this an unfair advantage?

Additional *WIMSE* Programs

- Reading & writing scientific articles
- Being a pre-med
- Balancing careers & personal lives
- Interviewing skills
- Research at Miami
- Summer internships



Communities outside the department...

- **Research (both academic and industrial) is increasingly multi-disciplinary**
- **A model for support in your profession *must* bridge the disciplines**
- **Interdisciplinary research teams allow women to look outside their specialty for a cohort to support their advancement**

Summary

- **Changes are incremental rather than transformational.**
- **Women find support from -- peers, instructors, mentors, and upper level students.**
- **These communities bring a richness to the physics learning environment and an increasingly supportive environment for women.**

*Programs which bridge
boundaries and support multiple
connections will form:*

**a Dynamic,
Engaging, and
Supportive Community !**

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