

THE COMPASS PROJECT
www.berkeleycompassproject.org



Berkeley
UNIVERSITY OF CALIFORNIA

PROGRESS through **PREDICAMENT**

How collaborating on tough problems
cultivates a successful, supportive community

Ana Aceves Badr Albanna Joel Corbo Gina Quan

What is Compass?

The Compass Project is a **student-founded** and **student-run** organization in the physical sciences at UC Berkeley.

Its goal is to **support students** (especially those traditionally **underrepresented**) through the challenges of their academic careers by creating a **unique environment** that blends teaching, learning, mentoring, leading, and community building.



Core Values

Compass's success lies in the shared vision and values of its membership.



**Strong
Community**



**Challenging
Problems**



**Student
Ownership**



Two Goals for This Talk

Inform you about some of the programmatic and organizational aspects of Compass.

Discuss how well we are **meeting our program goals** in the context of our values.



Today

Community
(Summer Program)

Ana Aceves

Overview of Compass

Joel Corbo

Challenging Problems
(Semester Courses)

Badr Albanna

Student Ownership
(Leadership)

Gina Quan

Questions (for us and you)



Community (Summer Program)

Summer Program

- 16-20 incoming freshmen
- 2 weeks preceding fall semester
- All expenses paid
- Residential, on Berkeley's campus



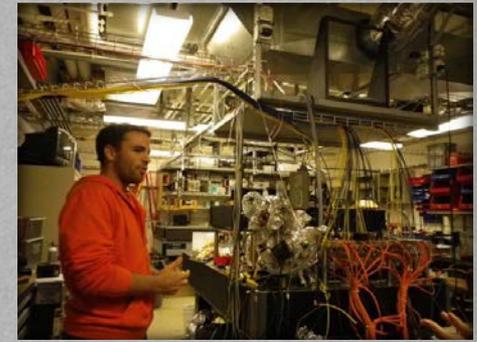
In the Classroom

- Overarching question (“How do wind turbines work?”)
- 3 classes (theoretical, experimental, reflective)
- Minimal lecturing
- Co-teaching, by grad students
- Curriculum updated daily to track student learning



Outside of the Classroom

- Homework
- Lab tours
- Weekend field trips
- Social events



Quotes on Community

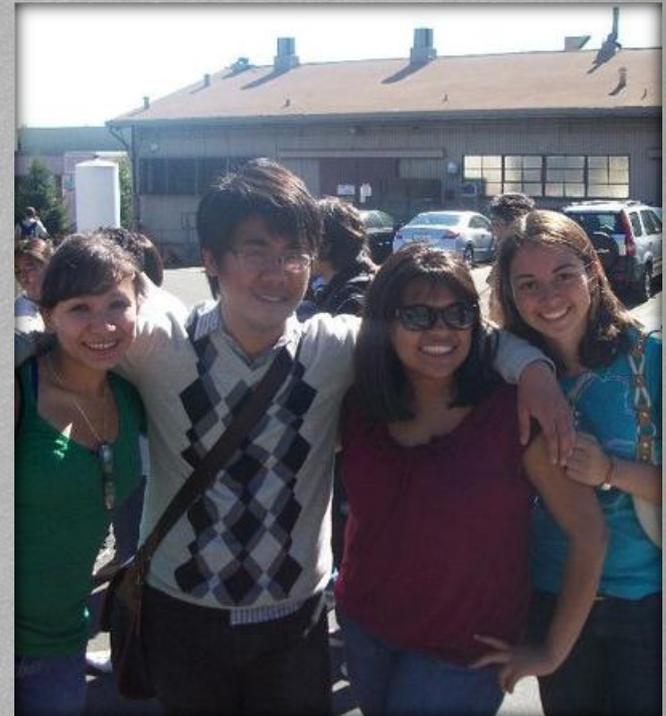
“Having Compass and its community as a first year student at a large university helped me find my way and transition to Cal.”

“Compass has become a family for me and a support system I can count on for guidance and help.”



Undergrad to Undergrad

- Lasting relationships beyond the summer program
- “Compass apartments”
- Makes transitioning into college life easier
- Peer-to-peer counseling between different years



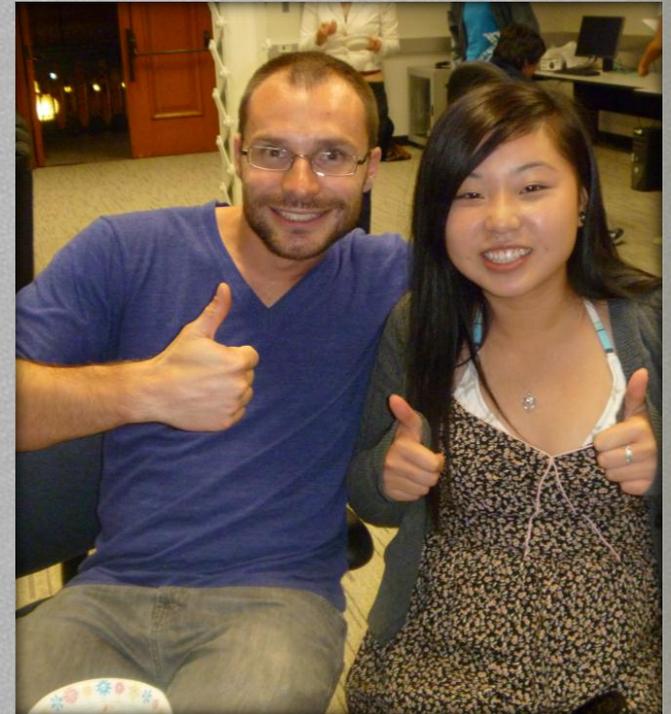
Grad to Grad

- “Making friends in grad school is really hard, but Compass makes it really easy.”
- Bonding through working together on summer program
- Develop relationships outside of Compass



Undergrad to Grad

- Undergrads treated as peers
- Grads mentor undergrads
- These relationships are otherwise rare on campus



Overview of The Compass Project

Why Compass?

For undergrads:

- Retention
(for the right reasons)
- Develop problem solving skills
- Self-advocacy

For grad students:

- Improved pedagogy
- Professional development
- Mutual support



Basic Facts about Compass

- Who?** ~65 undergrads, ~35 grad students, 2 postdocs, ~10 alums
- When?** Founded in 2006, first summer program in August 2007
- What?** Originally, the summer program. Rapid growth since (“Project”)



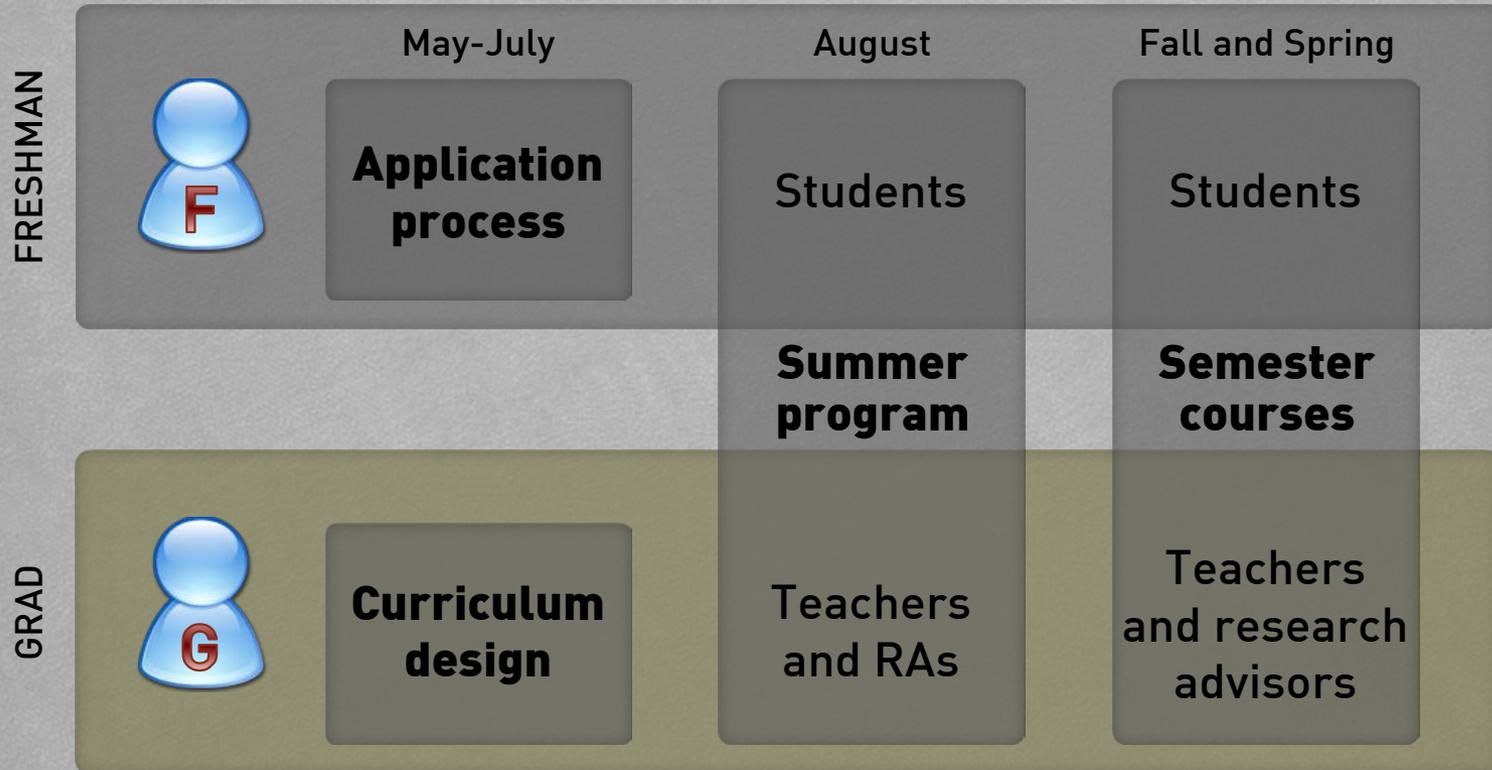
Demographics

2008-2011 Compass Summer Program students (N=62)(vs. Berkeley physics department average):

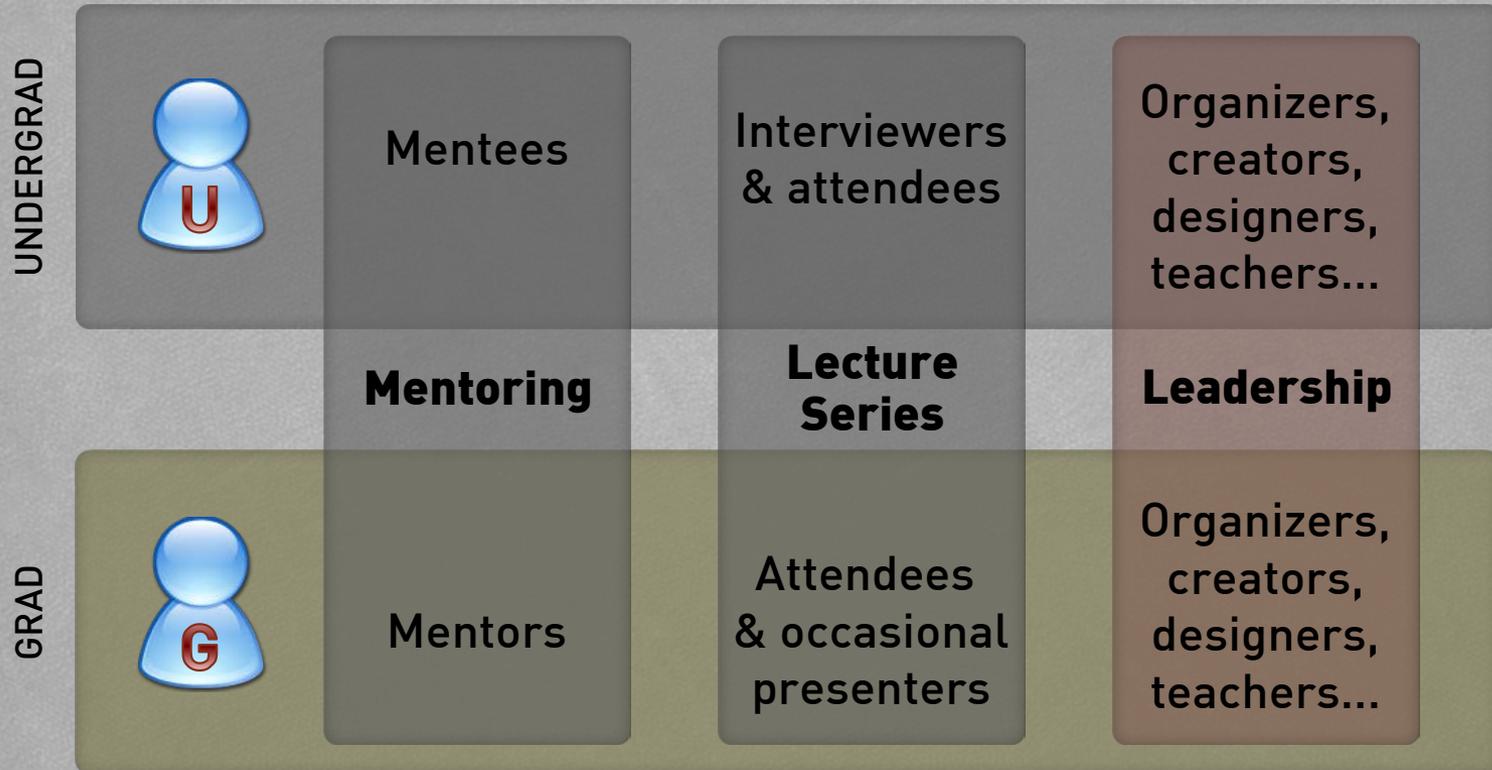
- **47%** are female (vs. 16%)
- **21%** are Chicano/Latino (vs. 6.9%)
- **5%** are African American (vs. 0.5%)
- **3%** are Native American (vs. 0.5%)
- **26%** are first-generation college students



Academic Courses



Services & Leadership



+ office hours + high school outreach + social events + ...



Organizational Structure

Courses

Summer program
Semester courses
Teacher training
Pedagogy

Academic Services

Mentoring
Lecture series
Office hours
High school outreach

Support

Technology &
social media
Publicity & design
Social events

External

Budgeting &
fundraising
Program evaluation
Alumni association

Student-run, with
departmental support
(administrative,
financial, office space,
faculty advisor)

Consensus-based
decision making

Continuous influx
of new leadership

Still a challenge:
financial stability



Challenging Problems (Semester Courses)

Semester courses

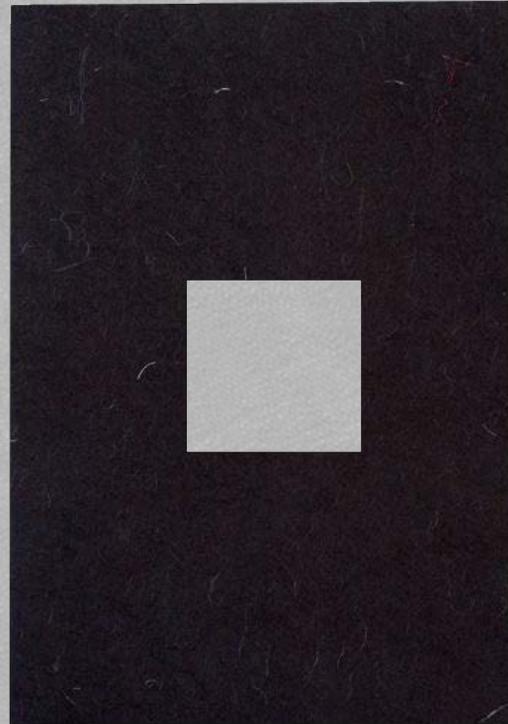
- 2 hours/week for credit
- Co-taught by grads and senior undergrads
- Concurrent with other math and science classes
- Fall: “Introduction to Modeling”
Spring: “Introduction to Measurement”



What is a “challenging problem?”



+



= ?



What is a “challenging problem?”

- Presented in its own context
- No clear method for solution
- Open-ended
- An instigator for further inquiry
- A gift that keeps on giving



Talking about models

1. Understanding and applying models (Using the ray model of light to understand images through apertures)
2. Extending models (Including lenses)
3. Creating our own models! (Students design and answer their own research question)



The classroom

- Small group vs. large group
- Coming to consensus on results and future questions for study
- Graduates students act as advisors for research groups



Talking about models

“[A model is] a useful representation of a physical phenomena in a particular context that aids in understanding.”

(Discussion included falsifiability, self-consistency, applicability, “accurate vs. inaccurate”)



Other Challenging Problems

For undergrads, adjusting to college:

- Working in study groups
- Approaching TAs and professors
- Reflecting on grades

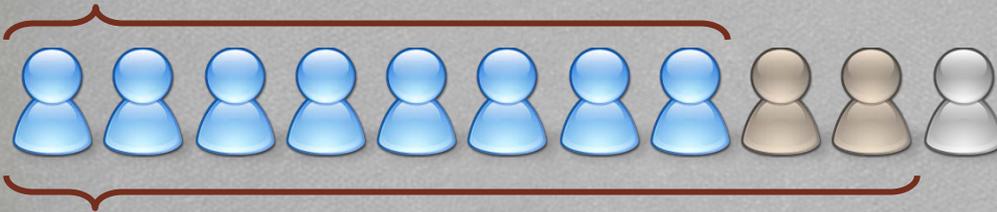
For grads, learning to teach:

- Co-teaching
- Teacher training and guidance in curriculum development
- Education journal club



Group work

8/11 of **fall** compass students taking physics worked more than half the time in groups (mostly on homework).



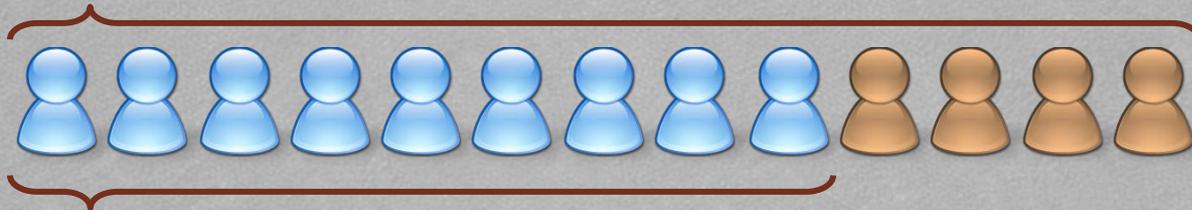
10/11 worked in groups at some point.

8/8 of **spring** compass students taking physics worked more than half the time in groups (mostly on homework).



Navigating the university

13/13 met at least a few times with a math or physics professor or TA.



9/13 met regularly (at least monthly).



Student Ownership (Leadership)

Undergrads in Leadership

Compass is not a program done **to** or **for** students, it is a program **of** and **by** students.

Undergraduates **shape** Compass by taking on leadership roles.

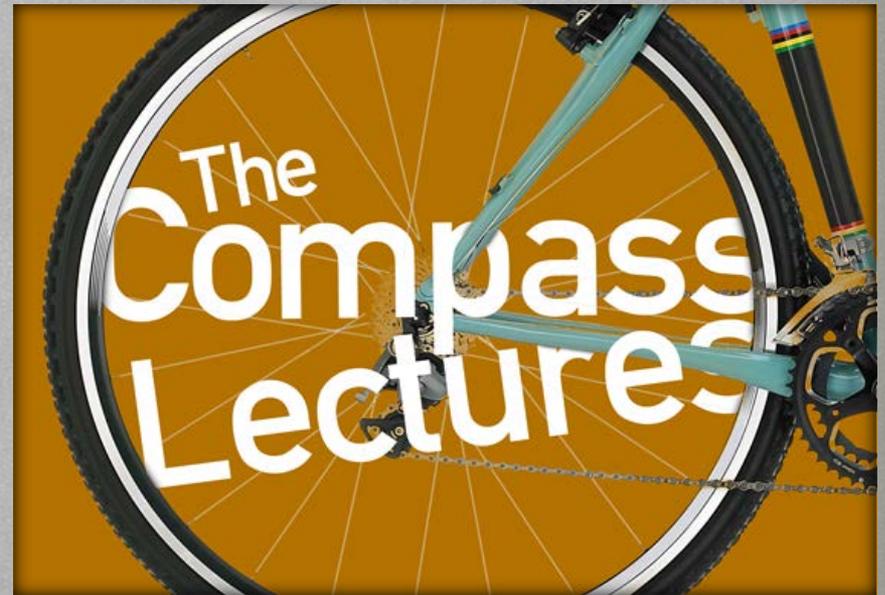
Leadership allows undergraduates to have a sense of **ownership**.



Undergrads in Leadership

In Compass, if you want to **see** something done, you can go out and **do it**.

When Compass needed someone to coordinate the Lecture Series, I did it!



Undergrads in Leadership

Undergraduates do more than fill leadership roles: they **advocate** for and create changes in the program.

Three undergraduates **created** a scavenger hunt day to help students learn how to work together and transition from the summer into the Summer Program.



Undergrads in Leadership

It worked because:

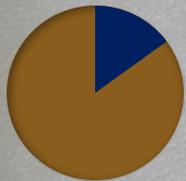
- Graduate students provided mentorship and support
- We were treated as peers in the organization

It helped us to:

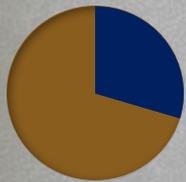
- Learn to coordinate and be organized
- Learn how to advocate for ourselves
- Dream big ideas!



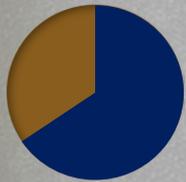
Undergrads in Leadership



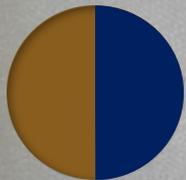
15% of Compass Undergraduates in leadership roles (event organizing, chairing a cluster, coordinating summer program).



30% of Compass Undergraduates have participated in structural decisions.



65% of Compass Undergraduates have volunteered time.



50% of people giving this talk are undergraduates.



Recap: Core Values



**Strong
Community**



**Challenging
Problems**



**Student
Ownership**



Acknowledgments

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- APS



A question for you

(while we answer your questions)

Consider the values (strong community, challenging problems, and student ownership) we have just presented. How do you or would you apply them at your home institutions?



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