INCLUSIVE PATHWAYS INTO TECH AND ENTREPRENUERSHIP END-OF-COURSE REPORT

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Inclusive Pathways into Tech and Entrepreneurship Class

The Inclusive Pathways into Tech and Entrepreneurship was a semester-long course in the Electrical Engineering/ Computer Science Department at UC Berkeley. The course featured weekly guest speakers hailing from traditional and non-traditional backgrounds in the tech industry. The aim of the course was to expose UC Berkeley students of all majors to new pathways into careers in technology. The primary goal of the course was to get humanities & social science students together with engineering students to learn about how they can work together on projects and ideate products for social good. My goal was to encourage STEM students to learn about ways they can look at their discipline from a humanities angle, and social science and humanities students to learn how they can use their skillsets to the tech industry.

Key Take-Aways
- The course successfully achieved a gender-balanced enrollment
- Course participants self-identified as from underrepresented backgrounds such as African-Americans, Latinx, and first-generation students
- Reading student evaluations on guest speakers, students enjoyed hearing the personal stories of speakers' career trajectories
- Students were invigorated to learn about untraditional positions at tech companies
- Students who were in non-tech majors could see themselves in the tech industry
- Students from engineering and other STEM majors reported that they learned about a new technology
- By the end of the semester, students reported that they found getting a job in tech to be less difficult and learned about "non-stereotypical" roles in tech
- The final project for this course was a product pitch in front of two Big Ideas judges. First place was a tie for a domestic violence education app called

"Unravelled" and an economic opportunity and financial literacy app addressing African American economic growth named "Blackbook"

Speaker Hallie Lomax from Lyft choosing to sit with students while giving her talk to encourage open diaologue

Demographics

The course had an official enrollment of 20 students. The demographics of class participants reflected a 50/ 50 male-female gender ration. In an optional class survey, six students self-identified as first-generation college students. Four students identified as low-income. In terms of underrepresented minority participation, three students identified as African American, two identified as Latinx and two identified as mixed-raced.
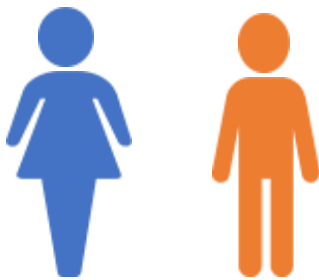
6 First generation students

4 Low-Income students

3 African-American Students

2 Latinx students

*The course had a 50/50 gender ratio*

Student Majors Represented:

The course successfully reached diversity of majors. I had students from Political Science, Philosophy, Cognitive Science, English, Economics, Business, Data Science and Electrical Engineering and Mechanical Engineering disciplines participate the course.

What they learned in the course:

The aim of the course was to expose students to technologies they may not have heard of and technological approaches to social issues.

Did this class expose you to careers you had never heard of?
13 responses

- Yes
- No
- Maybe

100%
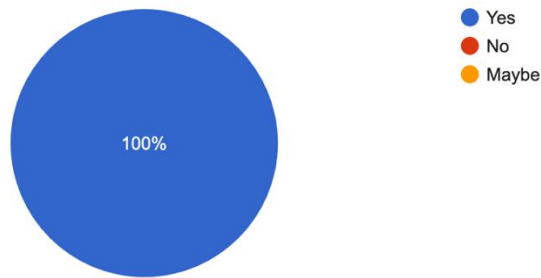
"Yes, I learned about the different pathways I could take if I wish to work for technical companies and that my academic background in English will not deter me from achieving my goals"- Student Respondent

All students who completed the exit survey stated they learned about careers they had never heard of. Students also learned about new areas of the big-named tech companies like Google's Life and Health Sciences Division they had not previously known existed.

Did the students learn about new Technologies?
All but one student surveyed felt like they learned about a new technology. The course leveraged the Creative Design Grant funds to pay for student membership to the CITRIS Invention Lab so that students copuld learn skills such as laser cutting and 3D printing and get assistance on a protype of a product idea they had. A number of students had not known about Invention lab resource prior to taking this course.

Did you learn about new technologies?
13 responses

- Yes
- No

92.3%

7.7%
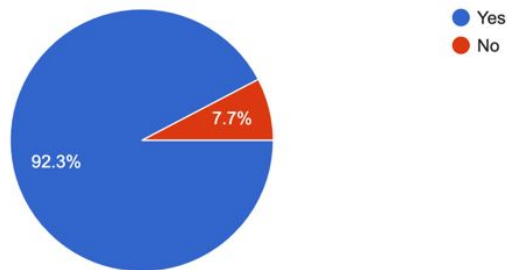
All students except one, learned about a new technology. Despite many students coming from Electrical Engineering and Computer Science, this suggests course was not repetitive for STEM majors and exposed students from tech and non-tech majors to new technologies.

Had you known about the Makerpass or Invention Lab before this class?
13 responses
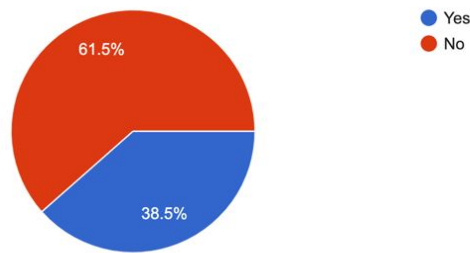
Over 60% of students had not heard about the on-campus resource of the CITRIS Invention lab which allows students with no technical background to design and create a protype of an idea they have with the help of an engineer. The course exposed many to a valuable campus resource for innovation.

Weekly Social Issues and Technology Themes. Were They Successful?
"Yes! I got a wide perspective of the tech industry with the diverse speakers that came to class. Before this class I never knew that tech companies even touched on certain non-tech related areas." -Student Respondent

Each week was framed around a wide range of social justice or diversity issues from assistive technology to refugee resettlement. Readings complimented the weekly themes to give students ideas on how technologies are being used to address the world's social issues. Guest speakers from some of the major tech companies such as Google Health and Tech Crunch came to share what When asked if they felt the course discussed diversity or social issues in tech, 92% of the students were confident that course addressed diversity and social issues in tech by answering "yes". One student responded with "maybe".

Do you feel this course discussed issues of diversity or social issues in tech?

13 responses

- Yes
- No
- Maybe

7.7%

92.3%
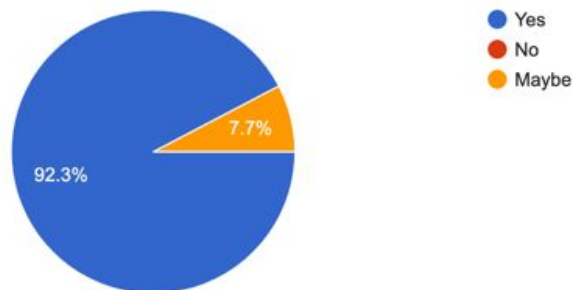
Diversity Represented in Speakers:

When I designed the course, I felt it was important to have gender and racial diversity of guest speakers to help reach out to underrepresented minority students. Two students prior to taking the course had not seen a person from their background represented in the tech industry. After the course, one student responded they had not. Despite having a fairly diverse representation of different ethnic backgrounds and career pathways, I could not get a Latinx speaker to the course. It is my hope that if taught again, I will have a more diverse set of speakers.

Students from a fairly represented minority group such as South Asian students, reported that they felt inspired seeing speakers had not pursued degrees in STEM fields, yet had untraditional careers in tech such as Priya Gupta, *Events, Tech Crunch.*

In their post-speaker survey's, students appreciated the personal stories of each guest speaker. Relatability and friendliness was key. Students felt valued that the speakers took time from their busy schedules to give guest lectures. Many participates grew in confidence in approaching the guests, and followed up with the speakers for informational interviews or to get resume critiques. Extra credit assignments were offered encouraging students to take selfies with professionals in their field or could help them in their final project.

"I think the direct contact the class gives students to professionals in different tech pathways is incredibly unique and helpful, and I know for a fact that I wouldn't have gotten this contact or advice or even the motivation to start reaching out to professionals now without this class."- Student Respondent

LinkedIn Headshots of Guest Speakers. Not Pictured: Calinda Thompson & Chris Meyers

Imagining a Future Working in Technology:

"Though I believe this class should be offered again for many reasons, the most significant one would be because it helps students who aren't studying technical disciplines learn that there is room for them to find roles at tech companies."- Student respondent

The goal of the course was to get students from all disciplines to see new entry-points into careers in tech fields. There is more to tech than coding. All but one student who completed the survey (92% of students) said they would pursue a career in technology after taking the course. **100% of students surveyed said they are likely to pursue a new idea or startup after taking the course**.
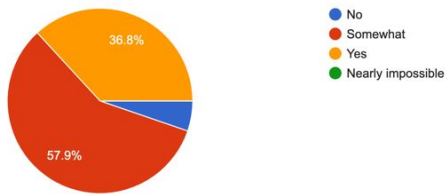
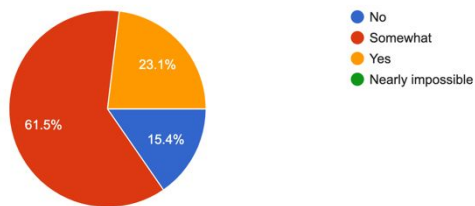## How likely are you to start a new idea, project, or startup?
13 responses

Not likely	0 (0%)
Somewhat likely	6 (46.2%)
Likely	4 (30.8%)
Very Likely	4 (30.8%)
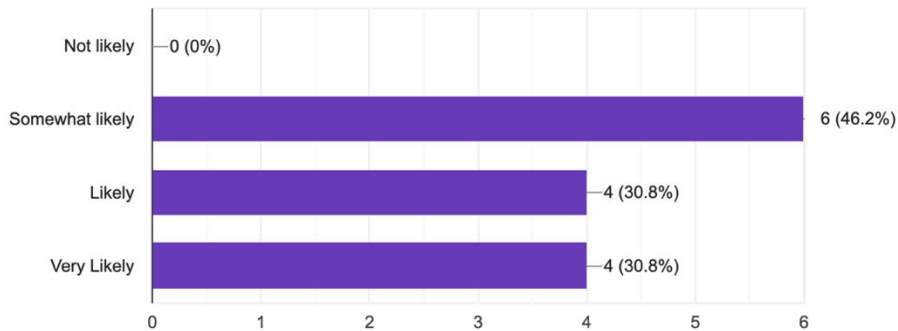
After taking the course, students thought it was less difficult to get a tech job

Do you think getting a job in tech is hard?
19 responses

- No
- Somewhat
- Yes
- Nearly impossible

36.8%

57.9%

Do you think getting a job in tech is hard?
13 responses

- No
- Somewhat
- Yes
- Nearly impossible

23.1%

61.5%

15.4%

Start of Course   End of Course

At the beginning of the course, 38% of students thought getting a job in tech was difficult, and 57% thought it was somewhat difficult. By the end of the course, the number fell to 23% thinking breaking into tech was difficult, 61% Saying it was somewhat difficult, and 15% thinking it was not difficult.

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It was not only non-tech students who benefitted from the course exposing students to untraditional pathways into tech, Electrical Engineering and Computer Science students said the class was a great value to them as well:

"I have actually already recommended some of my friends to take this class because I think they'd greatly benefit from this but most of the people that I think would benefit from this are CS/EECS students. It gave me insight as to how to get a cs job."- Student Respondent

Have you learned of positions at tech companies that use skills that you have?
13 responses
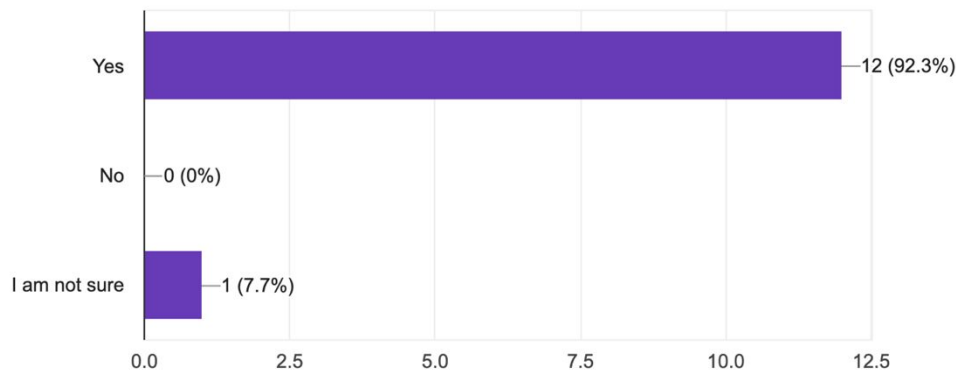
12 out of 13 students surveyed said they learned of positions at tech companies that use skills they have
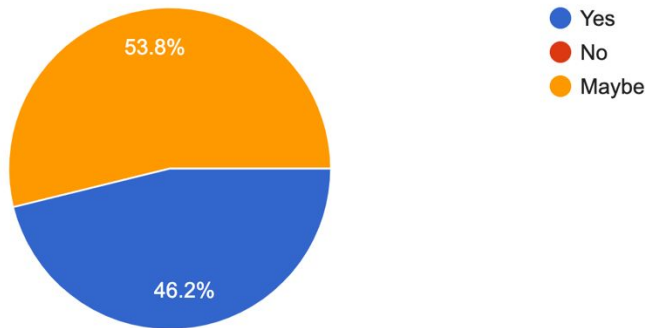
Final Project
The course columnated in a final product pitch students had developed throughout the course. Two Big Ideas judges volunteered to grade student's final pitches. We had a tie for first place: "*Unravelled*" – A healthy relationships & Domestic violence prevention app by students Madhuri Gudjje and William Parker and *"Blackbook"* an economic empowerment and financial literacy app for African-Americans by Nick Brathwaite. Both projects have a clear focus on improving human social conditions through technology which aligned with the theme of the course.

Final Pitch Day: (Left to Right: Course instructor, Nicole-Marie Cotton, with students Nick Braithwaite, Madhuri Gudjje & William Parker. Judges: Kira Gardener and Philip)

Do you plan on continuing to work on your final project after this class is over?

13 responses

- Yes
- No
- Maybe

53.8%

46.2%

One of the surprising things I found in the post-course survey is that students would like to continue to work on their final projects. Although some students had a difficult time coming up with an idea for a final project, they enjoyed the experience and found something to keep their interest.

Recommendations for the Future

"Yes, I think [this class] should be offered again. Every company will be a tech company in the next 15 years. This class sets you scope on the right target and helps you get there."- Student Respondent

Overall, the students found it a worthwhile course and told their friends to enroll in it the next semester. There are some things that I would like to do differently. I offered 10 students scholarships to the CITRIS Invention Lab. Although the students said they were excited to take advantage of the opportunity, few followed through with the mandatory lab training. This caused an inconvenience for the finance and lab staff that assisted with the financial transaction and reserved training for course participants. In the future, I advise implementing the lab's scholarship process of having students submit an essay in order to apply for the scholarship funds. I was advised by the lab manager that students often do not value free opportunities as much when there is no work involved.

"I wished we had more practice pitching because I feel even other than the content being persuasive, confidence when speaking is important." – Student Respondent

One student evaluation form noted that they would have liked to practice public speaking more. We did work on pitches during the second half of the semester as according to the syllabus, however, when prompted to share their practice pitches, only a few were comfortable in doing so. At the final pitch event, even the quiet students delivered. The next time I want to teach this course, I would like to create a fun activity to encourage public speaking each week. Public speaking and communication skills in general is a valuable skill that many speakers stressed was important for students to learn before entering the job market. "Pitching themselves" would be a great practice point for students to learn this skill and become more confident in their abilites during their time as students in Berkeley where they may experience "imposter syndrome".

"It [this class] should be offered again but by someone who can connect speakers to the class as well as Nicole did. I believe that her network is really good."

Finally, as a PhD student, this was my first time designing a course, creating a syllabus, recruiting course speakers from various tech events, coordinating logistics, and writing and securing a grant for teaching so I must evaluate myself. Based on student outcomes, I can say that I was successful in reaching the course objectives I set out. Some areas for growth are being more strict with attendance. Although the syllabus clearly states that more than two absences constitute a failing grade, there were some students who did not take the attendance policy seriously and I saw how that impacted other students by this survey response, "I feel like we should have stricter attendance/rules next semester though, because it was a shame missing out on the

community that the class could have formed". Indeed, having everyone come is an important part of community building I had hoped to form. Going forward, I must consider ways other than verbally re-iterating the attendance policy and having mandatory in-class speaker surveys to get students to come to every class. I am a student myself, so the fact that I may not be seen as an authority figure could have something to do with a few students not attending regularly or turning in assignments. Despite this, students reported I did a great job bringing in speakers and putting this class together. They told their friends about it during and after the semester as I continually received emails from interested students wanting to join. For that reason, I hope to be involved in this course being offered in the future.

Course Photo Album

Valerie Williams, Founder of Converge, spoke to students about values and passions

Peter Riche of Twitter brought a great sense of humor to his talk and calmed students fears about getting a job

Sudha Jamthe of Driverless World School and Stanford Continuing Education gave students of all majors advice on how they could enter the world of autonomous vehicles

Students in the CITRIS Invention Lab where they were offered scholarships

Catherine Bracy, Co-founder and Executive Director of TechEquity Collaborative gave her career trajectory story and told students how they can get involved in societal change while having a career in technology

Shweta Maniar of Google Health and Life Sciences Division opened student's eyes to the fact that Google had a life sciences division. She talked about the many paths she had traveled on her career journey and encouraged students to try different careers