

EECS 98: Inclusive Pathways into Tech and Entrepreneurship

Syllabus and Readings

Sutardja Dai Hall, Room 242, Thursdays, 5 PM-7PM, 2 Credit Hours

Course Contact: Nicole-Marie Cotton, ncotton@berkeley.edu

Questions:

How does tech solve global issues?

How can non-tech majors support diversity & inclusion in technology?

This class is for students who:

- Desire hands-on applied learning in the tech sector
- Students from social science field who want to learn how they can enter tech fields
- Want to have a safe place on campus to share their ideas in building inclusive spaces in Silicon Valley and STEM fields
- Want to learn more about how technology can help solve sociological issues
- Want to see underrepresented minorities in leadership positions
- Learn from practitioners in the field
- Leave the class with a project they can add to their professional portfolio

Course Objectives:

By the end of this course students will:

- Identify non-traditional pathways into tech
- Articulate strategies for fostering inclusive spaces in STEM environments
- Learn how to execute a project or big idea
- Understand how they can take their project or big idea to the next level
- Be able to critique others on their ideas and projects
- Think more broadly about who they need “on their team” in order to execute a project
- Network with a diverse array of guest speakers

Methods of Instruction:

This course is a student facilitated course and will foster a collaborative learning environment by engaging in discussions rather than lectures. Students will have an opportunity to lead a discussion about a topic of their choice. Guest speakers who are practitioners in tech fields will bring their expertise to enrich course material. Course discussions will be based on primary and secondary source materials from academic journals, journalistic pieces, white papers, and guest speakers. Students are also expected to spend time working on their final project which involves class time critiquing peer projects and ideas.

The readings take a broad approach to looking at diversity in tech spaces by looking at interactions in online social media spaces, gaming, corporate cultures and the ways underrepresented folks have built more inclusive spaces on their own to address gaps in representation and information access. Topics addressed include:

- 1) How do we define technology?
- 2) What is the difference between diversity, inclusion, and belonging?
- 3) What has been the experience of students on this campus learning about tech?
- 4) Algorithmic Oppressions & Algorithmic Accountability
- 5) Race in digital space
- 6) Race and gender in gaming
- 7) Fintech and global access to banking
- 8) Self-Driving Vehicles
- 9) Disability access and technology
- 10) Medical technologies
- 11) Diversity Returns on Investment
- 12) Pitching ideas
- 13) Leadership strategies
- 14) Undocumented individuals and technology

Meeting 1: Early Internet Studies on Online Gaming

This introductory meeting will start with a powerpoint presentation giving an overview of the course topics. We will dive right in exploring the topography of online gaming. Students will learn how the humanities, social science, and gaming technology intersect. **(Chris Bennet, Game Design Instructor, Stanford University Peace Innovation Lab)**

Nakamura, L. (1995) "Race in/for Cyberspace: Identity Tourism and Racial Passing on the Internet." in *Works and Days*, Volume 13, 181-193, 1995. (12 pages)

Packwood, D. (2018) "The Future of Gaming: The era of white male games for white male gamers is ending". *Quartz*. October 31, 2018 (Quick Read)
<https://qz.com/1433085/the-era-of-white-male-games-for-white-male-gamers-is-ending/>

Watch TED Talk "Gaming can make a Better World" by Jane McGonigal (20 Min video)
https://www.ted.com/talks/jane_mcgonigal_gaming_can_make_a_better_world?language=en

Optional Reading: *Trigger warning*

Sexual violence should never be the goal of a video game by Georgina Usti (10 Min read)
<https://thenextweb.com/code-word/2018/12/04/sexual-violence-should-never-be-the-goal-of-a-video-game/>

Meeting 2: Digital Divide & Segregated Online Spaces:

Technologies used to attack movements/ Identities. Discussion exposing the way certain websites or platforms create barriers or unwanted exposure for some marginalized communities. Bot technology is explained in application to online attacks. **Guest Speaker: (Catherine Bracy, Co-founder of Tech Equity & former Director of the Berkman Center for Internet & Society at Harvard University)**

Shane, S. and Frenkel, S. (2018) *Russian 2016 Influence Operation Targeted African-Americans on Social Media (5 min read)*
<https://www.nytimes.com/2018/12/17/us/politics/russia-2016-influence-campaign.html>

Saint, N. (2010). 'Why Is Twitter More Popular With Black People Than White People?' *Business Insider*. April 10, 2010. (Short read)
<https://www.businessinsider.com/twitter-study-results-2010-4> Accessed March, 2019.

The Human Consequences of Computational Propaganda: Eight Case Studies from the 2018 U.S. Midterm Elections
<http://www.iff.org/disinfoeffects/>

Optional:

Data Brief: Women of Color in Computing

https://www.wocincomputing.org/wp-content/uploads/2018/08/WOCinComputingDataBrief.pdf?i_nf_contact_key=978a01726818e8eebbce41a601ac36133ef35705cfbd14d6ba7ede22f4d42d7d

Meeting 3: How do the Humanities and the Social Scientists Engage in Tech?

This week we will be exploring how academics in subjects such as Art History and Ethnic Studies talk about technology. **Guest Speaker Prya Gupta, Tech Crunch (Cal Alumn)**

Gray, K. (2012). "Intersecting Oppressions and Online Communities." *Information, Communication and Society* 15, no. 3: 411-428.

Yoon, I. (2016). Why is it not just a joke? Analysis of Internet Memes Associated with Racism and Hidden Ideology of Colorblindness. *Journal of Cultural Research in Art Education*. Vol 33

Deeper Readings:

McPherson, Tara. 2012. "Why Are the Digital Humanities So White? or Thinking the Histories of Race and Computation." In *Debates in the Digital Humanities*, edited by Matthew K. Gold, 139-160. Minneapolis: University of Minnesota Press. (chapter in a book)

Lopez, Lori Kido and Konrad Ng. 2016. "Building Digital Bridges: Digital Humanities and the Transformation of Asian American Studies," In *The Routledge Handbook of Asian American Studies*, edited by Cindy I-Fen Chen, 305-317. New York: Routledge. (12 pages)

Meeting 4: Tech and Diversity in the Corporate world:

This class will review business statistics for the corporate sector (*assignment: find community or corporate resources to assess diversity*) **Guest Speaker TBD a D&I practitioner who is also familiar with disability justice**

Companies are still ignoring older female workers, and it's hurting their bottom line.

<https://www.fastcompany.com/90365272/why-diversity-initiatives-need-to-tackle-age-discrimination>

Mckinsey& Company Report: Delivering through Diversity

https://www.mckinsey.com/~/_media/mckinsey/business%20functions/organization/our%20insights/delivering%20through%20diversity/delivering-through-diversity_full-report.ashx

Inclusive Leadership: The View From Six Countries” *Catalyst May 2014* Inclusive Leadership: The View From Six Countries” *Catalyst May 2014* (PDF will be uploaded)

Diversity Statistics in Tech: A Deeper Look — and a Case Study. (4 min read)

<https://medium.com/@thisdotmedia/diversity-statistics-in-tech-a-deeper-look-and-a-case-study-151adcdb59f5>

12 Women to Watch in Product Management

<https://medium.com/@BlackTechWomen/12-women-to-watch-in-product-management-b35ae82c121b> Gives dismal statistics for black and Latinx women in tech, but a good article highlighting female leaders

“Wrong at the Root” Video on HR management hiring practices (Video presentation shown in class)

“Women Ask Fewer Questions than Men at Seminars.” *The Economist*, *The Economist* Newspaper, 7 Dec. 2017.

Inclusive Leadership: The View From Six Countries” *Catalyst May*

Meeting 5: Health Tech & Assistive Tech

This week will focus on smart devices and robots that assist in treating chronic medical conditions as well as a reading in blockchain in medicine. **Guest Speaker, Shweta Singh Maniar, Google Cloud Health Care & Life Sciences Division** *Field Trip to the Innovation lab to see assistive tech & students can start thinking about their final project*

All articles are short reads this week. Click the links to find them

Top 6 Robotic Applications in Medicine

<https://www.asme.org/engineering-topics/articles/bioengineering/top-6-robotic-applications-in-medicine>

3 Smart Medical Devices That Are Changing Healthcare in 2018, January 4th, 2018 by Cathy Reizenwiz in *Medical Software*

<https://blog.capterra.com/smart-medical-devices-that-are-changing-healthcare/>

Blockchain in Healthcare: 3 Reasons You Want It for Your EHR, March 30th, 2018 by Cathy Reizenwiz in *Medical Software*

<https://blog.capterra.com/blockchain-healthcare-ehr/>

“The tech empowering disabled people in cities” Ed Scott-Clarke and Nell Lewis, *CNN Business*. Thu May 30, 2019

Forbes New Technology For The Disabled Dec 28, 2018.

<https://www.forbes.com/sites/simonrockman1/2018/12/28/new-technology-for-the-disabled/#2584b6fd4386>

Emerging GIS Technology and Accessibility: Online Mapping for Everyone (speaks to visual barriers in general) <https://www.directionsmag.com/article/2722>

Computer generated online maps for the blind

<https://www.perkinselearning.org/scout/blog/tactile-maps-and-teaching-maps-skills>

Meeting 6: Algorithmic Oppression- AI is only as good as the foundational data:

This class will look at Algorithms and how they may not be inclusive for all and who may be more impacted by automation jobs. We will also discuss acts of congress and legal actions currently underway. **Guest Speaker: Hallie Lomax, Lyft**

Women Are on the Firing Line as Automation Claims More Jobs

Two-thirds of jobs in developing countries are at risk from new technologies, and women will fare worse than men.

<https://www.bloomberg.com/news/articles/2019-06-19/women-are-on-the-firing-line-as-automation-claims-more-jobs>

“A.I. Is Not as Advanced as You Might Think-It starts with the systems it was built off of”

<https://zora.medium.com/a-i-is-not-as-advanced-as-you-might-think-97657e9eecd>

“AI is sending people to jail—and getting it wrong” by Karen Hao Jan 21, 2019

<https://www.technologyreview.com/s/612775/algorithms-criminal-justice-ai/>

Cho, Alexander. 2017. “Default publicness: Queer youth of color, social media, and being outed by the machine.” *New Media and Society* 20, no. 9: 3183-3200. How Tumblr is used by queer youth due to the default public nature of posts of other social media platforms. (17 Pages)

Surveillance/ Facial Recognition (This week or the following week)

https://www.washingtonpost.com/opinions/theres-no-federal-standard-on-facial-recognition-on-congress-should-step-in/2019/02/16/aabf7b52-258f-11e9-81fd-b7b05d5bed90_story.html?utm_term=.b747ca665108

Deeper Reading:

Noble, Safiya Umoja. 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: New York University Press. (Lecture on Introduction or chapter 1).

Algorithmic Accountability Act

<https://www.theverge.com/2019/4/10/18304960/congress-algorithmic-accountability-act-wyden-clarke-booker-bill-introduced-house-senate>

Meeting 7: Refugee/Undocumented Immigrants & Fintech Serving the Underserved: (Subject to Change)

This class is focused on exploring the ways technology assists undocumented immigrants get around in every day life as they experience additional barriers. We will also look at machine learning technologies used to increase successful placement of refugees. **Guest Speaker: First Bank Speaking about what is needed to get funded (tentative)**

“How Technology has changed the lives of undocumented immigrants” (positive story)

<https://www.fastcompany.com/3025745/how-technology-has-changed-the-lives-of-undocumented-immigrants>

“How Technology Could Revolutionize Refugee Resettlement: A software program called “Annie” uses machine learning to place refugees in cities where they are most likely to be welcomed and find success”

<https://www.theatlantic.com/international/archive/2019/04/how-technology-could-revolutionize-refugee-resettlement/587383/>

“How We Can Use Technology To Help Refugees Establish A Verifiable Identity”

<https://www.forbes.com/sites/andysemotiuk/2018/12/03/how-cyber-technology-can-minimize-security-threats-from-incoming-refugees/#734434f84e8d>

5 Ways Fintech is Helping the Unbanked and Underbanked Population in 2018 (5 minute read)

<https://medium.com/fintech-weekly-magazine/5-ways-fintech-is-helping-the-unbanked-and-underbanked-population-in-2018-54f22417d0b1>

Deeper reading

Charting Fintech in developing countries (chapter in a book)

https://clmr.unsw.edu.au/sites/default/files/attached_files/charting_new_customer_journeys_in_developing_countries_-_buckley_webster_-_oct_6.pdf

Meeting 8. Indigenous Nations & Rural Communities Building Tech

This course period will explore the infrastructure issues rural communities face- specifically, First Nations/ Indigenous communities and what solutions they have come up with. **Guest speaker: TBD, Margarita Cuihuis (tentative)** from Stanford Peace Innovation. *Students start to work on their final projects*

Fair, Rhonda S. 2000. “Becoming the White Man’s Indian: An Examination of Native American

Tribal Web Sites.” *The Plains Anthropologist* 45, no. 172: 203-213. (Short article)

Rob McMahon, Michael Gurstein, Brian Beaton, Susan O'Donnell, & Tim Whiteduck. (2014). Making Information Technologies Work at the End of the Road (Canadian First Nations). *Journal of Information Policy*, 4, 250-269. doi:10.5325/jinfopoli.4.2014.0250

Meeting 9. Engineering Peace

This week we will explore the emerging field of Peace Engineering. We look at the ways technology has bridged people through political conflict by employing technology to positively change human behavior to promote social ties. **Guest speaker: Mark Nelson, Stanford, Peace Engineering**

Mooberry, Jessie (2016). Drones for Peace in Syria. *Building Peace*, 6, 29-30. (Selection of a wonderful publication which will be uploaded to bcourses)

Peace Data Standard: A Practical and Theoretical Framework for Using Technology to Examine Intergroup Interactions. *Frontiers in Psychology*. 28, May 2018
<https://www.frontiersin.org/articles/10.3389/fpsyg.2018.00734/full>

Deeper readings

American Association for Engineering Education Conference paper: Peace Engineering: Investigating Multidisciplinary and Interdisciplinary Effects in a Team-Based Course About Drones. (uploaded to bcourses)

Hoople, G. D., & Choi-Fitzpatrick, A. (2017, June). Engineering Empathy: A Multidisciplinary Approach Combining Engineering, Peace Studies, and New Technology. In *2017 ASEE Annual Conference & Exposition Proceedings*.

Meeting 10. Exponential Tech (IoT- The Internet of Things and Self Driving Cars)

This week we will learn about the human skills that are needed in IoT technology
Guest Speaker Sudha Jamthe, CEO of IoTDisruptions.com, AV (autonomous vehicle) Business Instructor at Stanford Continuing Education

Automation in mobility is outpacing skills re-training programs. *Axios*. Jun 7, 2019
<https://www.axios.com/authors/SudhaJamthe>

Sudha Jamthe is also going to share her Kindle Book soon. Check back for more info/ link

Meeting 11. Activism and Ethical Questions (Week 12 of Semester)

This week will focus on community organizations or citizen groups that monitor equity and accessibility in tech. We will also look at articles looking at ethical issues as well as ethical issues and civic tech. In-class peer project pitch critiques happen this week. **Guest Speaker: Ayori Sessalie, Salesforce, Founder of Selfpreneur.**

Sutherland, Tonia. Making a Killing: On Race, Ritual, and (Re)Membering in Digital Culture Preservation, *Digital Technology & Culture*, 2017, Vol.46(1), pp.32-40

“Tech Ethics Issues We Should All Be Thinking About In 2019”

<https://www.forbes.com/sites/jessicabaron/2018/12/27/tech-ethics-issues-we-should-all-be-thinking-about-in-2019/#34e4d8894b21>

Meeting 12: Pitching Ideas: Raising Capital & Being an Entrepreneur

This class will be helpful as the students learn what it takes to be an entrepreneur. What makes a good pitch? Students also prepare to give their final presentations.

Guest speaker: Valorie Williams, Strategic Partnerships, Stripe

18 Pitching Essentials: How to Pitch an Idea to Investors (and Early Customers)

<https://www.ryrob.com/how-to-pitch/>

What’s it like to be a female tech entrepreneur? By Freada Kapor Klein

<https://medium.com/kapor-the-bridge/whats-it-like-to-be-a-female-tech-entrepreneur-a170a99089eb>

Meeting 13 Thanksgiving (No Class)

Meeting 14. Sharing Final Presentations (Week after Thanksgiving)

This is the final meeting of the class. There are no final examinations during finals week. All presentations must be given by this class period.

Rubric for participation and what is required to pass the course:

The course is taken in P/NP credit only. Attendance is mandatory. Students who miss more than two lectures will automatically fail the class. Weekly Assignments/ Speaker reactions are 30% of the final grade, Participation in Discussion is 30%, and the Final project is 30% of the total grade while attendance is 10%. Students need a final grade totalling a minimum of 70% to receive a P in this class. Assignments consist of: Articles to share, speaker reactions, student-run discussions, and peer-to-peer feedback.

Final Project: Time will be dedicated each week to work on projects in class. The final project is a deliverable of your choice: a product, an app, an idea you would like to develop, a research proposal based on the material we covered in class, or what a “part 2” of this DeCal may look like if you would bring it to your department. Regardless of what you choose, you must submit written work on your project that answers the following questions:

1. What is the problem you are trying to address?
2. What is the scope of the problem? (i.e. How many people are impacted?)
3. What have other people done about it?
4. Why have the previous solutions fallen short?
5. What is your proposed intervention and why is it better than what is currently out there?
6. How do you plan to implement your intervention?
7. Who do you need on your team to take it to the next level?

Final Project Resources: I secured a grant for this class so I am able to offer selected students scholarships to a semester-long membership the CITRIS Invention Lab if in financial need. The lab helps students with no technology experience develop a prototype with the help of an engineer. Use of laser cutting and 3D printing machines are included in membership. To read more about the lab click here <https://invent.citris-uc.org/about-us.html>

Speaker Reactions: Measure your participation and also provide the course facilitators feedback on guest speakers. Reactions done in-class and you will be given the question form in discussion.

By enrolling in this course, you agree to the Academic Honesty Policy at UC Berkeley