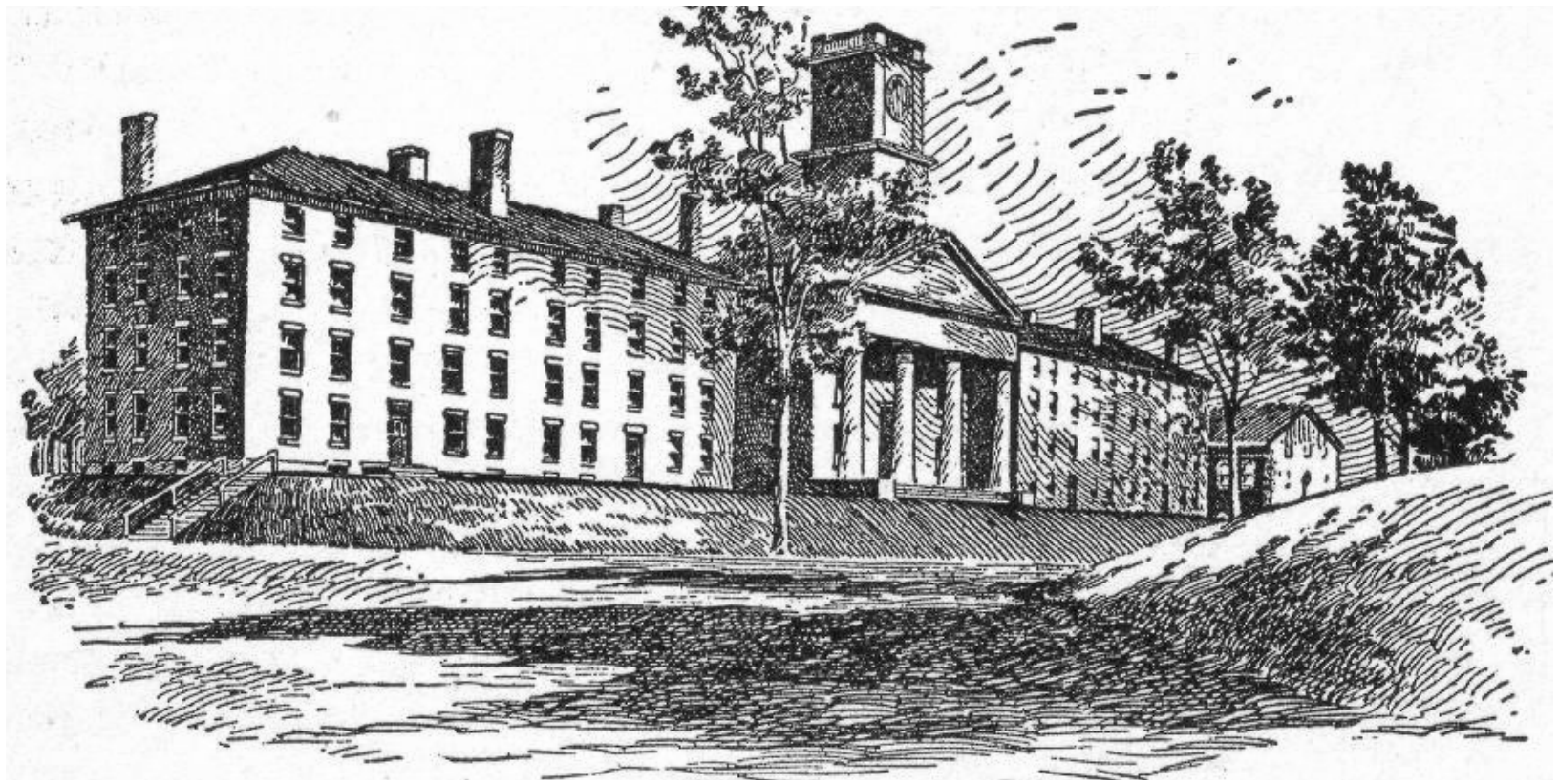
Being Human in STEM

Condensed Version



Bookmarks from HSTEM Community Salon, Dec. 2017

About the Condensed Version

Being Human in STEM is an interactive course that combines academic inquiry and community engagement to investigate the theme of diversity within STEM fields at Amherst and beyond. This two week long condensed version of the course will focus on collaborative research to improve the STEM undergraduate research environment and will be conducted by SURF (Summer Science Undergraduate Research Fellowship) students.

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“It’s mostly just that a lot of people are open to the idea now. That they are willing to make changes that help students feel like they can be a part of the community and then once you feel like you can be a part of the community you can be more likely to excel.”

- Amherst College Chemistry faculty member on the impact of Being Human in STEM on campus

”

Course Description

In the first week, SURF (Summer Science Undergraduate Research Fellowship) students will ground their understanding of the STEM undergraduate research experience at Amherst in national and global contexts, specifically investigating the ways in which gender, class, race, sexuality, and geographic upbringing might shape these experiences. We accomplish this through reading interdisciplinary scholarly literature and surveying existing evidence-based inclusive practices at a range of educational institutions.

In the second week, students will design their own group projects that apply the findings of their research to develop resources and engage the STEM undergraduate research community, whether at the College, local, or national level. Coursework includes daily readings, reflective writing, in-class discussion, and will culminate in a public presentation on the group projects.

Preparation for this course

Spring ‘18 HSTEM students, with help of faculty and staff, outlined this draft syllabus for the condensed model of Being Human in STEM. In addition, they brainstormed a list of potential projects that would progress the HSTEM initiative while focusing on undergraduate research experiences at Amherst and beyond. These projects are flexible and are designed to guide students in creating personally meaningful projects.

A brief list of essential readings about diversity in STEM and undergraduate research was compiled by HSTEM students, faculty and staff.

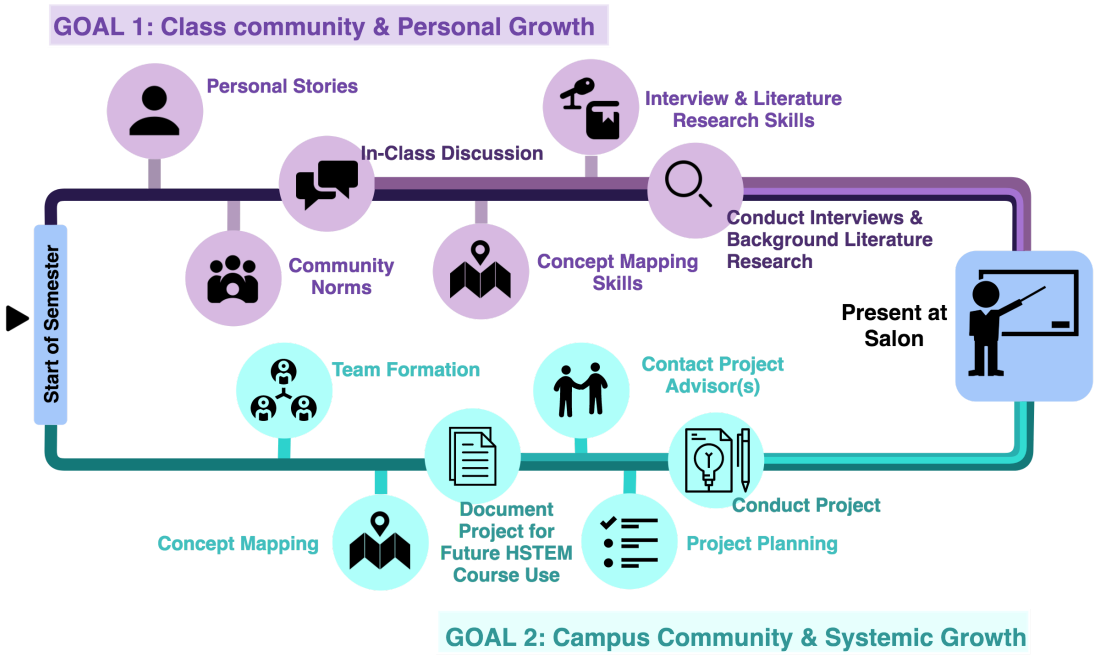
Course Goals

Goal 1: Class Community & Personal Growth

- Investigate the ways in which gender, class, race, sexuality, and geographic upbringing might shape the STEM student research experience.
- Identify barriers to success and best practices for overcoming these in undergraduate STEM research, both at Amherst and at other campuses.

Goal 2: Campus Community & Systemic Growth

- Work collaboratively with students, faculty, and staff across departments and campuses to forge connections with others committed to an inclusive STEM research community.
- Develop strategies for sharing your findings with Amherst's research community and beyond, to improve the summer research experience for all students.
- Present posters at the Summer Research Poster Session on September 7th.



Course Overview

	Day 1	Day 2	Day 3	Day 4	Day 5
AM	• Introductions • Community Guidelines • HSTEM Documentary	• Reading Discussion • Share HSTEM Stories	• Reading Discussion • Interview Bootcamp	• Reading Discussion • Project Introductions • Concept Mapping • Project Sign-Ups	• Reading Discussion • Finalize Survey
PM	• Reflect on SURF • Faculty HSTEM stories • Day 1 Reflection	• HSTEM Workshop • Day 2 Reflection	• Begin Interviewing SURF peers, alumni & faculty • Day 3 Reflection	• Draft future survey for SURF students & alumni • Day 4 Reflection	• Speaker presentation over lunch • Brainstorming Session in Project Groups • Day 5 Reflection
	Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
AM	• Group A chooses readings & leads discussion • Interviews due & Debrief	• Group B chooses readings & leads discussion • Project Updates & Feedback	• Group C chooses readings & leads discussion • Midpoint Presentations on Projects & Feedback	• Group D chooses readings & leads discussion • Project Updates & Feedback	• Salon with final presentations on projects
PM	• Work on Projects • Day 6 Reflection	• Work on Projects • Day 7 Reflection	• Work on Projects • Day 8 Reflection	• Work on Projects • Day 9 Reflection	• End of HSTEM celebration • Final Extended Reflection

Project List for Summer 2018

Project Name	Description
Assessing Summer Research at Amherst	• During Week 1, all students will conduct five interviews with peers, alumni and faculty regarding their STEM summer undergraduate research experience and summarize highlights and quotes. • During Week 2, students in this project will identify common themes from interviews. Students will integrate these findings with survey results and demographic information from previous years and produce a final report.

Pathways to Research at Amherst	• A common challenge for underclassmen interested in STEM is finding opportunities to get experience in a research lab.
	• Students will work together to find a ways to compile and disseminate information and resources about research opportunities at Amherst College.
	• This could involve information on
	  ○ research conducted by faculty members in different labs on campus,
	  ○ advice on contacting faculty members in labs of interest,
	  ○ prerequisite courses for specific labs in various departments,
	  ○ and tips on navigating a research environment in an undergraduate institution.

Welcome to STEM Guide	• Students will create a “Welcome to STEM” guide for incoming first years and other underclassmen in order to improve the STEM retention rate for certain demographics.
	• Guide could include information on
	  ○ what to expect studying STEM at Amherst,
	  ○ effective ways to handle difficult STEM course loads,
	  ○ study tips for specific courses from current students,
	  ○ academic resources on campus like the Quantitative Center and Peer Tutoring,
	  ○ community resources like the Multicultural Resource Center, Women and Gender Center and Queer Resource Center,
	  ○ and affinity organizations like Association of Women in Science and First Generation Association.

Ethics Workshop	• All summer research students are required to attend a workshop on the ethics of research. • Students will work on developing an HSTEM aspect of the workshop by bringing awareness to the experiences of marginalized students in STEM and how their identities might shape these experiences.

Daily Course Outline

Day 1: Introductions & Community Guidelines

Overall Goals:

- Introductions in order to begin building community within the class
- Introduce Being Human in STEM goals and expectations
- Establish Community Guidelines due to the personal nature of discussions on identity with the help of Multicultural Resource Center interns
- Introduce the HSTEM Story assignment (See Appendix E and F)

Materials / Preparation Needed:

- Laptops (needed Day 1 - 10)

Class Breakdown:

Morning:

- 45 min: Introductions and Icebreaker
- 45 min: Community Guidelines with MRC interns
- 30 min: Watch Being Human in STEM documentary
    - Link: http://www.beinghumaninstem.com/documentary.html
- 45 min: Discussion on Being Human in STEM documentary

Afternoon:

- 60 minutes: Reflections on SURF experience & identity in research
- 30 minutes: HSTEM Story introduction
- 45 minutes: Faculty HSTEM stories

FREE:

- Complete HSTEM Story
- Write Day 1 Reflection

Assignments:

- Day 1 Class Reflection: Students will keep a digital journal in the form of a Google Doc in which they'll write 300-500 word reflections after each course. Reflections should touch on class discussions, assigned readings, and project progress. A link to the updated Google doc must be submitted upon completion *daily*. To alleviate the perceived workload, students are encouraged to complete their reflection before they leave in the afternoon. **Due at the start of the next class.**
- Write own HSTEM Story (approximately 1-2 pages that tell your journey in STEM, including aspects about background and failures/challenges). **Due at the start of the next class.**
- Read 2 assigned articles. In order to encourage active reading, students **must** annotate articles digitally with comments/questions. **Due at the start of the next class.**
- Write 2 questions suitable for in-class discussion on two notecards (questions shared in the context of class discussion will be kept anonymous). Questions should relate to either SURF, the Amherst STEM experience, prior class discussions, assigned readings, potential projects or future goals for HSTEM. **Due at the start of the next class.**

Day 2: HSTEM Stories

Overall Goals:

- Share HSTEM Stories
- Conduct HSTEM Workshop (See Appendix H)

Materials / Preparation Needed:

- HSTEM Story
- Assigned Readings & two Question Notecards (due **everyday** from Day 2 - Day 9)

Class Breakdown:

Morning:

- 60 min: Discuss Readings
    - Question notecards are shuffled and randomly distributed to encourage the active engagement of all students
- 90 min: Students begin sharing HSTEM stories to class

Afternoon:

- 60 min: Complete sharing HSTEM stories
- 90 min: HSTEM workshop

FREE:

- Write Day 2 Reflection

Assignments:

- Day 2 Reflection: **Due at the start of next class.**
- Assigned Reading & Question Notecards: **Due at the start of the next class.**

Day 3: Interview Project

Overall Goals:

- Introduce Interview Project (See Appendix B & C)

Class Breakdown:

Morning

- 60 min: Discuss Readings with Notecards
- 90 min: Interview Workshop with Ashley & Dawn

Afternoon

- 90 min: Begin Interview Project
    - As a group, come up with 5-6 interview questions with the help of facilitators and faculty
    - Contact at least 4-5 SURF peers/former SURF students *and* at least 1-2 faculty member/staff (from Day 3 - Day 6)

FREE:

- Conduct 5 Interviews via Skype/Phone Call
- Day 3 Reflection

Assignments:

- Day 3 Reflection: **Due at the start of the next class.**
- Assigned Reading & Question Notecards: **Due at the start of the next class.**
- Conduct at least 5 interviews with peers, staff and faculty regarding STEM undergraduate research environment at Amherst and write a summary and reflection on **each** experience. Upload to Moodle the recording of your interview as well as the notes you took during your interview, summary and reflection. **Due Monday at the start of class.**

Day 4: Project Introductions

Overall Goals:

- Project Introductions
- Concept Mapping

Class Breakdown:

Morning

- 60 min: Discuss Readings with Notecards
- 60 min: Project Introductions

Afternoon

- 60 min: Concept Mapping with Kristen Greenland
- 30 min: Project Sign-Ups
    - Students will sign up through a Google form to ensure even distribution of numbers and department of SURF research
    - Students should submit a paragraph explaining why they are interested in their top choice and some ideas and/or skills they can contribute to their project
- 90 min: Begin working on an end of SURF/HSTEM survey
    - This data will be useful for a future SURF/HSTEM poster presentation
    - Survey will be sent out to alumni of the SURF program

FREE

- Finalize Survey
- Conduct interviews
- Day 4 Reflection

Assignments:

- Day 4 Reflection: **Due at the start of the next class.**
- Assigned *Dasgupta* Reading & Question Notecards: **Due at start of the next class.**
- Conduct interviews: **Due Monday at the start of class.**

Day 5: Dasgupta Lunch

Overall Goals:

- Dasgupta Lab Lunch
    - Dr. Nilanjana Dasgupta's work focuses on increasing and diversifying the STEM workforce for the 21st century. She is currently a professor of psychological and brain sciences at the University of Massachusetts at Amherst. (See Appendix A for selected readings)
- Finalize Survey
- Brainstorm Session with Project group

Class Breakdown:

Morning

- 90 min: Finalize and send out survey for SURF alumni

Afternoon

- 120 min: Dasgupta Lunch

FREE

- Conduct interviews
- Day 4 Reflection
- Mandatory brainstorming session with project group after class

Assignments:

- Day 5 Reflection: **Due at the start of the next class.**
- Assigned Reading & Question Notecards: **Due at the start of the next class.**
- Conduct interviews: **Due on Monday at the start of class.**
- Notes from project brainstorming session and Action Plan for Week 2 must be uploaded to Moodle by one person in each group. **Due Friday at midnight.**
    - Groups should:
        - Draft an explicit description of what product you want to have at the Salon (video clip, workshop guide, resources guide, activity demo, etc.).
        - Make a day-by-day plan of what needs done each day to produce a final product by next Friday's salon.
- **Group A:** Choose 2-3 readings that pertain to Project A for class to read for Day 6 & post on Moodle. **Due Saturday at midnight.**
- **Group B:** Choose 2-3 readings that pertain to Project B for class to read for Day 7 & post on Moodle. **Due Sunday at midnight.**

Day 6: Begin Working on Projects

Overall Goals:

- Work on projects

Materials / Preparation Needed:

- Recordings, Summary and Reflections on 5 Interviews

Class Breakdown:

Morning:

- 60 min: Group A Leads Discussion
- 60 min: Interview Project Debrief

Afternoon:

- 120 min: Work on Projects

FREE:

- Day 6 Reflection

Assignments:

- Day 6 Reflection: **Due at the start of the next class.**
- Assigned Reading & Question Notecards: **Due at the start of the next class.**
- Work on mid-point presentation. **Due Wednesday at the start of class.**
- Work on final project: **Due on Friday at the start of class.**
- **Group C:** Choose 2-3 readings that pertain to Project C for class to read for Day 8 & post on Moodle. **Due Monday at midnight.**

Day 7: Continued Project Work & Feedback

Overall Goals:

- Continue working on projects
- Receive Feedback

Class Breakdown:

Morning

- 60 min: Group B Leads Discussion
- 60 min: Project Updates from each group
- 30 min: Feedback Notecards
    - Students are given notecards and must write 3-4 sentences of feedback for each of the other groups

Free

- Afternoon free to work on projects
- Day 7 Reflection

Assignments:

- Day 7 Reflection: **Due before the start of the next class.**
- Assigned Reading & Question Notecards: **Due before the start of the next class.**
- Work on mid-point presentation. **Due Wednesday at the start of class.**
- Work on final project: **Due on Friday at the start of class.**
- **Group D:** Choose 2-3 readings that pertain to Project D for class to read for Day 9 & post on Moodle. **Due Tuesday at midnight.**

Day 8: Continued Project Work & Midpoint Presentations

Overall Goals:

- Continue working on projects
- Midpoint presentations

Class Breakdown:

Morning

- 60 min: Group C Leads Discussion
- 90 min: Midpoint Presentations & Feedback

FREE

- Free afternoon to work on projects
- Day 8 Reflection

Assignments:

- Day 8 Reflection: **Due before the start of the next class.**
- Assigned Reading & Question Notecards: **Due at the start of the next class.**
- Rough Draft based on feedback: **Due at the start of the next class.**
- Work on final project: **Due on Friday at the start of class.**

Day 9: Continued Project Work & Feedback

Overall Goals:

- Work on Projects

Class Breakdown:

Morning

- 60 min: Group D Leads Discussion
- 60 min: Project Updates from each group
- 30 min: Feedback Notecards

FREE

- Afternoon free to work on projects
- Day 9 Reflection

Assignments:

- Day 9 Reflection: **Due at the start of the next class.**
- Complete final project: **Due at the start of the next class.**

Day 10: Salon

Overall Goals:

- Final Presentations
- End of HSTEM Celebration

Materials / Preparation Needed:

- Final Project

Class Breakdown:

Morning

- 60 min: Debrief on SURF/HSTEM experience and brainstorm ideas for future direction
- 90 min: SALON!
    - The goal of the salon is to provide the opportunity for students to share their accomplishments, increase community awareness, and obtain feedback on student projects.
    - We will invite the Amherst & 5 College community to attend the event, and send specific invitations to colleagues and students who have previously expressed interest in HSTEM.

Afternoon

- **Pizza Party!**

Assignments:

- Extended 1000-word (3-4 pages) final reflection on HSTEM experience. **Due next week.**

Acknowledgements

During Spring ‘18, four students (Sanyu Takirambudde ‘18, Sam Amaka ‘19, Kevin Zhangxu ‘20 and Nelindra Grebler ‘19 (Hampshire College)) developed this condensed model of the Being Human in STEM course.

Thank you to Professor Sheila Jaswal, Megan Lyster, Kristen Greenland and Minjee Kim ‘17 for assisting in the creation of this document!

Appendix

A: Suggested Readings

On Undergraduate Research:

- Pender M, Marcotte DE, Domingo MRS, Maton KI. The STEM pipeline: the role of summer research experience in minority students' ph.D. aspirations. Educ Pol Anal Arch. 2010;18(30):1–36.
- Carpi A, Ronan DM, Falconer HM, Lents NH. Cultivating minority scientists: undergraduate research increases self-efficacy and career ambitions for underrepresented students in STEM. J Res Sci Teach. 2016; doi:
- Paul R Hernandez, Anna Woodcock, Mica Estrada, P Wesley Schultz; Undergraduate Research Experiences Broaden Diversity in the Scientific Workforce, *BioScience*, Volume 68, Issue 3, 1 March 2018, Pages 204–211,
- Melanie T. Jones, Amy E. L. Barlow, Merna Villarejo. "Importance of Undergraduate Research for Minority Persistence and Achievement in Biology." he Journal of Higher Education, Vol. 81, No. 1 (Jan. - Feb., 2010), pp. 82-115
- The Royal Society: Research culture: embedding inclusive excellence
- The Ohio State University. The New Face of STEM Research: Diverse Students, Shared Experiences: (2018)

On STEM Persistence, Retention and Intervention:

- Allen-Ramidial, Stacy-Ann. "Reimagining the Pipeline: Advancing STEM Diversity, Persistence, and Success." BioScience 64, no. 7 (2014): 612-618.
- Findley-Van Nostrand, Danielle. "Evaluating Psychosocial Mechanisms Underlying STEM Persistence in Undergraduates: Evidence of Impact from a Six-Day Pre–College Engagement STEM Academy Program." CBE life sciences education 16, no. 2 (2017): 1-15.
- Harackiewicz, Judith. "Closing achievement gaps with a utility-value intervention: Disentangling race and social class." Journal of Personality and Social Psychology 111, no. 5 (2016): 745-765.
- Moss-Racusin, Corinne A. "A "Scientific Diversity" Intervention to Reduce Gender Bias in a Sample of Life Scientists." CBE life sciences education 15, no. 3 (2016): 1-11.

On Gender in STEM:

- McGee, E. "The Troubled Success of Black Women in STEM." Cognition and Instruction 35, no. 4265 (2017): 265-289.
- Moss-Racusin, Corinne. "Science faculty's subtle gender biases favor male students." PNAS 109, no. 41 (2012): 16474-16479.
- Dennehy, TC, Dasgupta N. "Female peer mentors early in college increase women's positive academic experiences and retention in engineering." PNAS (2016).

On Race in STEM:

- Flores, Glenda. "Latino/as in the hard sciences: Increasing Latina/o participation in science, technology, engineering and math (STEM) related fields." Latino Studies 9 (2011): 327-355.

On Women of Color in STEM:

- McGee, E. "The Troubled Success of Black Women in STEM." Cognition and Instruction 35, no. 4265 (2017): 265-289.
- Ong, Maria. " Body Projects of Young Women of Color in Physics: Intersections of Gender, Race, and Science ." Social Problems 52, no. 4 (2010): 593-617.

On Sexual Orientation in STEM:

- Cech, Erin A., and Tom J. Waidzunas. "Navigating the heteronormativity of engineering: the experiences of lesbian, gay, and bisexual students." Engineering Studies 3, no. 1 (2011): 1-24.
- Waldrop, M. "Diversity: Pride in science." Nature 513, no. 7518 (2014): 297.

On First Generation Students in STEM:

- Stephens, Nicole. "Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students." Journal of Personality and Social Psychology 102, no. 6 (2012): 1178-1197.
- Tibbetts, Y. "Affirming Independence: Exploring Mechanisms Underlying a Values: Affirmation Intervention for First-Generation Students." Journal of Personality and Social Psychology 110, no. 5 (2016): 635-659.

On Inclusive Classrooms:

- Killpack, Tess L. "Toward Inclusive STEM Classrooms: What Personal Role Do Faculty Play?" CBE life sciences education 15, no. 3 (2016): 1-9.

On the Model Minority Myth:

- Meseus, S. "Deconstructing the model minority myth and how it contributes to the invisible minority reality in higher education research." New Directions for Institutional Research 142 (2009): 5-15.

On Impact of Increased Diversity in STEM:

- The scientific community: Diversity makes the difference
- Phillips, Katherine W. "How Diversity Makes Us Smarter." Scientific American 311 (2014)**.**

On Dialogue:

- Sue, D. "Race Talk: The Psychology of Racial Dialogues." American Psychologist 68 (2013): 663-672.

On Building Community:

- Community Builder’s Toolkit (http://www.racialequitytools.org/resourcefiles/idr.pdf)

B: Interview Email Sample

Dear [Interviewee],

I hope this email finds you well!

I'm following up on our earlier conversation, in which you expressed interest in being interviewed for a project I am working on in my special topics course, “Being Human in STEM".

The interview would entail a casual conversation around your experiences working/studying in the STEM community--at Amherst or beyond. The discussion is quite free-form, but I've included a few "sample" questions below to give you a sense of what to expect.

- What have been defining characteristics of your STEM experience at Amherst?
- Are there any obstacles that you have experienced during your career in STEM?
- Do you feel like aspects of your identity have played into your experience (whether positive or negative)?
- What experiences have helped to mitigate those obstacles and help you succeed?
- Are there things you could imagine that would help you with this STEM experience at Amherst?

Since we are eventually hoping to include excerpts of interviews on a course website, it would be very helpful to have you fill out a short consent form (linked **here**) that lets you choose how we might use your interview (ie, can we include your name, can we directly quote you, etc). If you have any concerns about the form, feel free to hold off on completing it until we meet in person; I'd be happy to answer any questions you may have.

I look forward to meeting with you soon! If you have any questions or concerns, please don't hesitate to reach out.

All the best,
[Name here]

C: Interview Consent Form Sample (Google Form, Fall 2016)

Being Human in STEM is a special topics course focused on diversity in STEM fields - these interviews will give us a better understanding of the lived experiences of humans in STEM at Amherst College. Incorporating information and testimony from these interviews and elsewhere, the course will culminate in a public presentation of findings and project work. It is our hope that this course will also provide a space for honest conversation about people's experience in STEM at Amherst and beyond.

1. I understand that:

1. My participation in this interview is voluntary.

2. I may withdraw my consent and discontinue participation at any time without bearing any negative consequences.

3. You have giv en me an explanation of the procedures to be followed in the project, and answered any inquiries that I may have.

4. The content of this interview will be made part of a final report and may be incorporated into a website, but under no circumstances will my name or other identifying characteristics be included without my permission.

O	YES, I understand.
O	NO, I do not understand.

2. I agree to have my comments:

	YES	NO
Incorporated into a general summary without attribution.	O	O
Quoted directly without attribution.	O	O
Quoted directly with attribution.	O	O
Quoted directly with photo.	O	O
Shared in an audio recording.	O	O

DEMOGRAPHIC INFORMATION

Completion of this page (whether fully or partially) is completely optional. Any information collected will not be used to identify individual respondents, and will be shared as aggregate data only.

3. What is/are your main area(s) of study within STEM? (Select from list of STEM Departments)
4. What is your gender? (Male/Female/Non-binary/Other:_____)
5. Do you identify as transgender? (Y/N/Other:_____)
6. Which race/ethnicity best describes you? (Select one or more.)

- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black/African American
- Hispanic/Latino
- White/Caucasian
- Other:

7. Which of the following best describes your sexual orientation?

- Heterosexual
- Gay/Lesbian
- Bisexual
- Other:

8. Please indicate if you believe that any of the following statements apply to you:

- I am the first generation of my family to attend college
- I come from a low-income background
- I come from a socially, culturally, and/or educationally disadvantaged background

9. I have reviewed the procedures to be followed and hereby give my consent to participate in this research. (Sign name in text box to confirm).
10. Date: _____
11. Please send me a update on the group results of this research project upon its completion. (Y/N)

D: Interviewer Feedback Form (Fall 2017)

Interviewers were asked to fill out a feedback form to help plan the interviews for next semester's HSTEM class. Questions included:

a. Write a short reflection on the interview process. What did you gain from the interviews?
b. Were there things that helped you feel more prepared for the interviews (readings, elevator pitches, assignments, etc.)
c. Is there anything you wish you had known before going into the interview, anything that would have helped you for future courses?
d. Do you have any suggestions to how to incorporate these interviews more into this course?

E: HSTEM Story Assignment Template

Name:

Graduation Year:

Major(s): (declared or potential):

Current sense of your intersection with STEM in the future (Med school, grad school, informed citizen, etc.):

What you're looking forward to in this course / What you hope to get out of it:

Category Brainstorming

1. **Driving Questions in this course:**
2. **Community Outreach Ideas:**
3. **Skills you could contribute:**

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Your own HSTEM Story:

(Submission of your story may vary depending on the file type and how you decide to present your story.)

F: HSTEM Story Example

Name: (Anonymous)
Graduation Year: (Anonymous)
Major(s): (declared or potential): (Anonymous)
Current sense of your intersection with STEM in the future (Med school, grad school, informed citizen, etc.):

Med school, but strong research focus? Haha applying to med schools right now, but still unsure about my future.

What you're looking forward to in this course / What you hope to get out of it:
I've wanted to be part of this course before, but simply didn't have room in my schedule(for the past 3 semesters, when this course started). I hope to make some concrete outcomes and compile them, so that we can have a tangible summary handout of this semester's work.

Category Brainstorming

1. **Driving Questions in this course:**
   I am curious whether a STEM experience is different for students who came into STEM considering pre-health careers vs. non-pre-health careers. (Or how being a pre-health student changed their perspective / experience in STEM at Amherst).

2. **Community Outreach Ideas:**
   Have events partnering w/ Big Brothers & Big Sisters, reach out to student clubs so that we can collaborate. Target both pre-health and non-pre-health students.

3. **Potential Project Ideas:**
   - Interview & research on pre-health / pre-med culture affects STEM experience
   - I'm also interested in the elementary school outreach project.

4. **Skills you could contribute:**
   Organizational, event planning, poster design, handout design, effective publicity methods, *etc*.

(NEXT PAGE)

Your own HSTEM Story

Note: this is just an example - many students wrote paragraphs or varying formats to write their stories. The lengths also varied from half a page to several pages, depending on how much detail each student went into. Students can also submit a voice recording, video, etc.

(Note: this is going to be a very informal/colloquial writing, and kind of a braindump)

tl;dr. Interest in STEM was more of an interest in math. I was mostly drawn to science because of my interest in medicine and then research. When I started research, I fell in love with it and the implications it had on medicine. At Amherst, I fell in love with sciences and majored in Biochemistry/Biophysics and loved how it challenged me. But, as I pursued this field and began to have bigger goals about my future, I faced more and more challenges as (1) an immigrant (2) asian (3) female, who's short/petite. Although I "overcame" my initial fears with great mentors (Dr.J among one of them) and alumni, these are still issues I face as I think about my future. An anecdote about Fink Symposium, challenges i've had, is described below in the last bullet point .

Background

- I grew up in Seoul until 9yr old, and there was a lot of emphasis on math (I loved math). When I immigrated to the U.S. (Seattle), math education was at a much lower level than that of Korea. But - there were enough catching up to do with english, that I never really sought out more opportunities in math. As I moved onto high school, my love for math only grew stronger!
- Interest in research: My real interest in sciences began in high school and stemmed out of my interest in medicine, although I have found sciences interesting from middle school.
    - I have been interested in becoming a physician from sometime in 4th grade. It was in high school, though, that I wanted to learn more about our bodies, illnesses, and improving current treatments.
    - That's when I thought of research and the power it has to transform medicine and our everyday life.
    - So I emailed a researcher in the local community who had just moved to Seattle, and almost immediately fell in love with it. From working with hands, thinking of the bigger picture, critical thinking involved, pioneering new knowledge to improve therapy -- it was so cool.
- I went to an all-girls catholic high school! One of the subjects we were taught (which I thought was useless at the time) was about communications, language, and world religion. Now that I look back at it - it was an empowering education.

HSTEM-related Story: really started with coming to Amherst

- I was always close to my high school teachers, often having lunch with them and visiting their office whenever. But, I heard about how that was not the case in college, and that I'd be one of 100s of students in college.
- I came into Amherst, pre-med, limited chemistry knowledge (pretty good background in biology). I was placed into 155, and was challenging! Never heard of hybrid orbitals and barely even knew about *s* orbitals. I remember calling my mom and asking "what if I'm not even good in the sciences?", because I knew I wasn't the best in the humanities. But, if I didn't believe in myself succeeding, who would? So I did a million problems on my own & went to tons of office hours.
- But, even if I went to office hours, I never really knew that professors cared about me as a human being. After all, I was transient in their lives - 4 years, if even that. They knew my name, but did they care to really know me?
    - This was despite having wonderful experiences with my professors who believed in me and were welcoming
    - This kind of changed starting 2nd semester of my freshman year, when I saw that professor cared about me when I missed classes because I had the flu and got some stitches because of falling up the stairs.
- What really changed this perspective = Amherst uprising
    - Already in sophomore year I became close to professors and saw them more as human beings. But the dramatic change was with Amherst uprising.
    - This was really when I sat *how* much professors really cared about me. Even professors who had taught for 20+ years and (I thought) were probably a bit more "used to" these issues and would just dismiss them
- Also a big part of my experience as a student = premed, AWIS, local community
    - Clubs I led - public health collaborative & AWIS
    - Both were due to my exposure to the disparities we have in access to healthcare and challenges I would face as a female in the sciences
- Fink symposium: one of the speakers asked if MD/PhD would be the right choice given that I was a female
    - Somehow I never thought of this having gone to an all-girls school and never really thought of differences between female vs. male
    - Even though I didn't take offense at his statement, it's true that I will have challenges if I want to pursue such path as a female.
- The following year, I spoke at the Fink Symposium as a speaker
    - One of the comments about me was that I had a lot of "kinetic energy." (which is true, but also got me to think about what made me so - was it my personality? Asian culture? Me being an immigrant, and knowing that I won't get same resources unless I do it myself? Combination?)
    - The next day, I asked a different speaker about what could I do as a student to address diversity in upper-level STEM courses, since I saw that as I proceeded with my courses, I saw the diversity decreasing. I was told to don't mind it now, but

to continue my studies and, when I become higher up, to hire a diverse community. Then, he said that “a lot of immigrants have the American dream” and “try hard” to achieve “their” dream as he looked at me.

- I truly believe it was well-intended. He was a very warm-hearted person, I just felt a disappointed & stereotyped because I was the speaker.
- I also think that his background might’ve made him really think that there wasn’t anything I could do (not enough “power”) to change circumstances here at Amherst

Other than these serious issues: I’m actually a very clumsy girl, who, as I said before, fell *up* the stairs and leave a lot of stuff behind (& lose them). I love to procrastinate, but can also be a bit OCD and a perfectionist. I am an only child, parents live half-and-half in Korea & States. All other relatives live in Korea. I have a dog, nine years old, and who is living with me at Amherst right now after 4 years being apart.

G: Community Guidelines Example (Amherst Fall 2017)

In our HSTEM Community, we all agree to the following:

1. Confidentiality
2. Listen without judgment: “try on”
3. Engage with ideas, don’t challenge experiences
4. Move forward / move back
5. Hold each other accountable (lovingly)
6. Speak from your own experiences & refrain from assumptions
7. Assume good intentions. Call-in, not call-out
8. Be okay with silence

H: HSTEM Workshop (Fall 2017 & Spring 2018)

HSTEM UPDATED WORKSHOP: Facilitator Guide

There will be two workshop modules, one at the beginning and one at the end of the semester. The respective themes of each are as follows:

1. What are the main challenges faced by underrepresented students in STEM?
2. What are effective approaches the institution can take to support students from diverse backgrounds?

They will be structured as detailed below:

1. **GROUP FORMATION & INTRO** (10 mins)
   Goal: present HSTEM background & establish ground rules for discussion
   - ➢ Workshop 1: HSTEM student facilitators share elevator pitches with class & establish ground rules for discussion
   - ➢ Workshop 2: Provide institutional background of Amherst College STEM inclusivity

   Based on training from MRC, facilitators will set community expectations for discussion.

2. **IDENTIFIERS, INDEX CARD WRITING & DISCUSSION** (35 mins)
   Goal: Reflect individually on STEM experience at Amherst and then, in groups, identify common patterns and their driving factors, using discussion questions as guidance

   Identifier Cards

   Students will be given an identifier card with the same number as their index card. While responses will remain anonymous, the identifier cards will ask for demographic information that will help contextualize the notecard responses. The identifier cards will be collected before the index cards are filled out.

   1. Class Year
   2. Major
   3. Race/Ethnicity
   4. Gender Identification

   Index Card Prompts

   - ➢ Workshop 1:
     1. What have been the **defining characteristics** of your STEM experience?
     2. Do you feel like **aspects of your identity** have played into your experience, whether positive or negative? If so, which aspects?

   - ➢ Workshop 2:
     1. As a STEM student at Amherst, do you think your institution offers you **adequate support**?
     2. How could the institution better support parts of your identity? What are those identities?

Small groups

Students will be divided into groups based on how many moderators there are. The index cards are then collected, shuffled, and randomly distributed to the students. Small group discussions will follow.

- ➢ Workshop 1:
  What are the main challenges you see caused by identity in either the response you wrote or the ones just shared? What do you think are the driving factors behind these (e.g. on an institutional level)?

- ➢ Workshop 2:
  What are commonalities across students' perspectives regarding institutional support at Amherst? As a group, in what ways do you think Amherst should improve?

Small Group Discussions

Students will have a whiteboard where major themes will be written down, preferably by a HSTEM member so that all students can participate in the conversation.

3. **CLASS WRAP UP** (5 mins)
   Goal: Allow students to relate the themes and points brought up in their small group discussions.

   HSTEM members will go around the room so that students can share what they gathered. Major themes will be written on the chalkboard/whiteboard at the front of the room.

4. **FEEDBACK AND REFLECTION ON WORKSHOP** (5 mins)
   Goal: Allow time for students to discuss any main takeaways from their discussion and the workshop, as well as get feedback for improvement on future iterations
   1. What did you find engaging about the activities? What did you get out of today? What could be adjusted?
   2. What other workshop topics do you think are needed to help all Humans in STEM teach and learn in an equitable, inclusive manner?

LAYOUT

1. HSTEM Introduction OR Institutional Background + Ground Rules (10 minutes)
Goal: present HSTEM background & establish ground rules for discussion

We are planning on going to the MRC at the beginning of next semester prior to conducting the workshops. This way we are able to effectively explain the ground rules and conduct the workshops. For the first workshop, we will use the original workshop's idea to introduce the BHIS class and set ground rules. For the second workshop, we will reiterate the ground rules and instead of introducing BHIS, we will give background on what the institution is currently doing to support students in STEM by explaining the Summer Science program for incoming freshmen.

2. Identifier card+trading cards handed out (2 minutes):

The notecards from the pilot workshop were a great way to analyze the major themes in the students' responses. Though some students openly touched on their identities, others did not. We believe that it would be useful to have a way of looking at the demographics of the students alongside their responses,

all the while keeping the responses anonymous. In this way, we hope to elevate our analysis of the response by having the possibility of studying their responses in a more informed and contextualized way.

We decided that we could do this by handing out the students two blank notecards with the same number on them. Before having students answer the questions on their notecards individually, we would have them answer demographic questions on the first notecard, then immediately hand it back to us. After the workshop, we would then have a way of analyzing their responses with regards to their demographic information through this numbering system.

3. Index Card Questions (5 minutes):
Students will have roughly five minutes to anonymously answer the questions posed for the workshop.

Workshop 1:
As a student in STEM, what have been the defining characteristics of your STEM experience? Do you think these experiences, whether positive or negative, are rooted in a part of your identity? If so, what parts of your identity?

Workshop 2:
As a STEM student, do you think your institution offers adequate support? How can the institution support different parts of your identity within STEM? What are those identities?

4. Small Group Discussions (30 minutes):

Note cards will be collected, shuffled, and randomly distributed so that students can get into small groups (the number of groups are based off of how many BHSTEM students there are present) based on the trading card that was randomly given to every person at the beginning of class. Once in the small groups, the students will read out the notecard they were given, and the discussion begins when everyone in the group has read.

One of the feedback responses from a student who participated in the first workshop was that they could have talked “about institutionalized reasons women/people of color and other marginalized groups don't as often pursue science or how their identities are discounted in the scientific field. Thus, the first workshop’s discussion section seemed like a missed opportunity to have a more guided reflection on what was shared, in a manner that allows students to expand on and relate their experiences or the experiences shared on the notecards to structural and/or societal issues.”Students will also be given a dry erase board so that a BHSTEM representative can record major themes and points so that they can present to the class at the end.

5. Small Group Takeaways (5 minutes):

Each group shares what they wrote on their white boards. Main points are written on the main board in the front of the class.

Workshop 1 Themes:
1) There is a stigma about time and rigor in STEM
2) Rigidity of STEM structure
3) Imposter syndrome

4) Suppression of identity
5) On/Off semester differences: competition
6) Isolation

6. Feedback/Remarks

Because it seems like feedback for the workshop not only allows us to continue to expand on it, but also allows students to let us know what their takeaway is important, we decided to have the final section serve as time for us to collect feedback. Students would receive a notecard in which they can answer the following questions:

1) What did you find engaging about the activities? What did you get out of today? What could be adjusted?
2) What other workshop topics do you think are needed to help all Humans in STEM teach and learn in an equitable, inclusive manner?