

California Institute of Technology

Core Curriculum Steering Committee

Mon, April 13, 2020

CCSC members: Mike Brown, Federico Echenique, Matthias Flach, Kevin Gilmartin, Arushi Gupta, Melany Hunt, Nicholas Hutzler, Cathy Jurca, Daniel Neamati, Mitchio Okumura, Christy Salinas, Adam Wierman, Kai Zinn

CCSC members not attending: Erika Salzman,

Guests: Cassandra Horii, Lindsey Malcolm-Piqueux, Debi Tuttle

1. Core learning outcomes.

- The core learning outcomes were established (as found at the end of this summary) in preparation for Caltech's accreditation review. The typical cycle (per WASC):
 - Development of learning outcomes are a response to requirements for Caltech's accreditation
 - Curriculum alignment with outcomes
 - Assessment planning & implementation
 - Using results for improvement
 - Repeat cycle

Because we are in the midst of this process, it was suggested that we accept the draft outcomes and make suggestions for future revisions.

- Melany noted that she was asked by the Caltech Admissions office to talk at a Pre-Frosh online event later this week. She (and probably other faculty members) have been asked to address the following question: "*Why should a student study this discipline here versus elsewhere?*" This question is certainly appropriate in the context of the core. Is the core, which comprises almost half of the undergraduate requirements, a compelling reason for students to come to Caltech? Is it distinctive and reflective of Caltech's strengths?

2. COFHE survey data

Melany presented COFHE senior survey data from 2012, 2014, 2016 and 2018 for Caltech (thanks to Lindsey for providing the recent Caltech data) and for MIT (from the MIT website). From the Caltech data, students indicate that their learning in certain areas has increased over time (such as "writing clearly and effectively" which has gone from roughly 20% to 40% of students indicating that their experience at Caltech has contributed "very much" or "quite a bit"). However, writing and several other learning outcomes as found in the survey are relatively low (less 50% of students indicating that their experience at Caltech contributed very much or quite a bit to their learning); these areas include oral communication, placing current problems in a historical, cultural or philosophical perspective, and appreciating art, music, literature and drama.

3. Analysis of 12 engineering transcripts.

Melany had prepared a sample analysis of the HSS coursework taken by 12 current EAS seniors. Below is a short summary.

- Most students take intro humanities courses in 1st year

- Students take intro social science across all years
- Most student do not take a writing-intensive course each year
- Advanced social science classes can include Bayesian statistics, finance and courses that focus on business or financial analysis
- In EAS (not sure about other divisions), students do not take science communication courses until senior year

There was discussion about the delay in taking the science communication and writing courses. Student would like to take these courses earlier but are unable to do so.

Cathy and Kevin also described the efforts that have been made over recent years to coordinate and provide a consistent voice regarding writing within the HSS division and the associated efforts through the Writing Center.

Federico indicated that the social science faculty will be meeting in the near future to talk about the core. We should be able to hear about their report at the next meeting.

4. Computer science.

Adam briefly described the ongoing conversation with the CS faculty. As discussed, we are recommending that Caltech students take CS 1. There will be an effort to teach this course twice per year, such as fall and spring. The CS faculty had proposed that this course be taken within the first 6 quarters at Caltech (and after 6 quarters it would need to be taken on grades). There was some discussion that the 6 quarter restriction might not be necessary.

Core Student Learning Outcomes

1. Substantive experience in problem solving, collaboration, and communication.
Students will be able to ...
 - a. Manage increasing academic challenges while developing resilience and confidence.
 - b. Develop and satisfy their intellectual curiosity.
 - c. Collaborate effectively and ethically, recognizing diverse models of academic collaboration.
 - d. Communicate to a range of audiences through a variety of media.
2. A broad and rigorous foundation in the sciences.
Students will be able to ...
 - a. Demonstrate understanding of foundational concepts from the sciences.
 - b. Use disciplinary thinking, analytical skills, and a range of methods in the sciences.
 - c. Apply their knowledge and skills to diverse problems within and across disciplines.
3. Significant study in the humanities and social sciences.
Students will be able to ...
 - a. Explore and expand upon learning in fields beyond intended areas of specialization.
 - b. Appreciate and understand the contributions of the humanities, social sciences, and arts to human endeavors.
 - c. Engage in informed analysis of cultural, political, and economic issues.