



March 4, 2024
updated membership

Oliver O'Reilly, Vice Provost for Undergraduate Education, Chair
Jennifer Johnson-Hanks, Executive Dean, College of Letters & Science
Martin Olsson, Chair, Department of Mathematics
Steven Kahn, Dean, Division of Math and Physical Sciences, College of Letters & Science
Tesha Sengupta-Irving, Associate Professor, Berkeley School of Education
Zachary Pardos, Associate Professor, Berkeley School of Education
Gireeja Ranade, Associate Teaching Professor, Electrical Engineering & Computer Sciences
Rosalind Johnson, Director of Enrollment, Equity & Success, Enrollment Management
Lauryn Valerio, Deputy Director, Centers for Educational Equity and Excellence

Re: Task Force on Math Preparedness

Dear Colleagues,

I invite your service on a task force to investigate and advise on the high failure/repeat rates in the Math 1A course (calculus for STEM majors). As best you can, I ask that you identify the causes or possible causes for these high rates. It would also be helpful to understand the impact of these rates on students, particularly time to degree or changes in intended majors, as well as the consequent effects on programs that require Math 1A as a prerequisite. The administration is seeking advice on actions that might be taken to address the situation in Math 1A *per se* and math preparedness and the calculus sequence for STEM majors more generally. Hence, the administration invites recommendations on the provision of additional instruction to prepare students for Math 1A, better advising of students, improved tutoring and similar support, and effective pedagogical practices. It would be helpful to attach cost estimates for the recommendations made.

The principal scope of the task force is twofold:

- How do we best ensure that students who enroll in Math 1A will be successful?
- How do we ensure that the students have mastered the material in Math 1A so that they are adequately prepared for courses that have Math 1A as a prerequisite.

Additionally, the task force may wish to consider broader issues as they pertain to other introductory math courses (including Math 1, 1B, 10, 16A, and 32); that being said—and recognizing that we cannot boil the ocean—the task force's primary focus should be on Math 1A and math prerequisites for STEM majors.

Beyond addressing the issues identified above, the task force may also wish to give thought and make recommendations as to how we effectively monitor the matter going forward. What data, for example, should we seek to collect on an ongoing basis? To the extent that, in the time allotted, the task force cannot address certain questions or those questions require a longitudinal analysis beyond its capacity, what follow-up or ongoing analysis/study would be valuable?

To help promote effectiveness, membership in the task is intentionally limited. That being said, the taskforce should call upon campus experts as appropriate, notably those on educational inequities and other equity and inclusion issues as needed. Consultation with other sister UC campuses and their math departments could also

prove beneficial.

Areas that the task force will likely wish to investigate include, but are not limited to:

- The apparent paucity of information about mathematics preparation and achievement conveyed in high school math grades, which may make it challenging for Admissions to identify students best prepared for success;
- Widespread variation in COVID learning loss among incoming students;
- Possible decline in study habits and learning skills among incoming students, including habits with regard to class attendance and use of office hours;
- Insufficient high school math preparation that may involve too much rote instruction and insufficient emphasis on learning principles for mathematics and deeper conceptual understanding; and
- Issues with how mathematics courses at Berkeley are numbered that may lead to misperceptions as to logical sequence or degree of difficulty/level.

The task force is encouraged to consult widely on best practices. Consultation with the following seems particularly important:

- Math 1A instructors, either directly or via conversation with the Chair of the Department of Mathematics;
- The Undergraduate Admissions Office;
- The Division of Equity and Inclusion;
- The Student Learning Center;
- The College of Engineering; and
- The College of Chemistry.

Vice Provost Oliver O'Reilly has graciously agreed to chair this task force. Analytical and administrative support will be provided by Anthony Yuen, a project/policy analyst in the Division of Undergraduate Education. I ask that the task force provide a report by the end of the current semester, so no later than early May; the goal is to provide time to plan for curricular and pedagogical changes starting in the 2024–2025 academic year. In all likelihood, many changes will need to occur in subsequent academic years.

Thank you for considering this request and, as I hope, for participating in this important effort.

Sincerely,



Benjamin Hermalin
Executive Vice Chancellor and Provost

cc: Tsu-Jae Liu, Dean, College of Engineering
Douglas Clark, Dean, College of Chemistry
Michelle Young, Dean, Berkeley School of Education
Andrew Eppig, Institutional Research Analyst, Division of Equity and Inclusion
Audrey Thomas, Institutional Research Analyst, Division of Undergraduate Education
Cara Stanley, Executive Director of the Student Learning Center
Anthony Yuen, Project/Policy Analyst, Division of Undergraduate Education