

Office of the President

TO MEMBERS OF THE ACADEMIC AND STUDENT AFFAIRS COMMITTEE:

DISCUSSION ITEM

For Meeting of March 20, 2024

MATHEMATICS PREPARATION FOR UC ADMISSION – PAST, PRESENT, AND FUTURE

EXECUTIVE SUMMARY

Over the past several months, a UC faculty Workgroup on Mathematics (Area C) Preparation, convened by the Academic Senate’s Board of Admissions and Relations with Schools (BOARS), has been working with subject matter experts and key partners to develop criteria and guidelines for courses that fulfill University of California’s math admissions requirement. The purpose of this item is to provide an overview of the workgroup’s analysis and recommendations, which were recently presented to and endorsed by BOARS.

BACKGROUND

In fall 2023, the Academic Senate’s Board of Admissions and Relations with Schools (BOARS) convened a faculty Workgroup on Mathematics (Area C) Preparation¹ to consider UC math admissions requirements in two stages: Stage 1 included considering current UC policy and providing guidance for how this policy should be implemented; it focused on the types of math courses that qualify as “advanced mathematics” for UC preparation and whether they can substitute for (“validate”) the courses required for UC admission. Specifically, the workgroup was asked to assess whether certain data science courses that have been allowed to substitute for the advanced algebra requirement include the required content. Stage 2 (to be completed by May 2024) focuses on UC’s definition of foundational mathematics for college preparation and whether to recommend changes to UC admissions policy related to Area C. The Area C Workgroup’s Stage 1 report (Attachment 1) was submitted to and unanimously endorsed by BOARS. Further background information was provided to the Committee in the November 2023 item on Math Preparation and Undergraduate Admissions (Attachment 2).

As noted in the workgroup report: “In July 2023 BOARS ruled unanimously that existing policy does not allow currently approved courses in ‘data science’ to validate Algebra II, and that this validation should cease without delay. The Area C Workgroup was convened in October 2023 to provide further, expert guidance about: 1) UC’s definition of advanced mathematics courses; 2) the criteria by which advanced mathematics can validate UC requirements for algebra and geometry coursework; 3) whether data science courses can potentially qualify as advanced

¹ <https://senate.universityofcalifornia.edu/files/committees/boars/area-c-workgroup-charge-and-members.pdf>

mathematics for admission purposes, and if so what content they would need to contain.”

The Area C Workgroup charge for Stage 1 was as follows:

1. The workgroup will determine UC's definition of advanced mathematics for college preparation (i.e., what types of courses are eligible for the fourth year of area C coursework?). The workgroup will examine the criteria for a high school course to be articulated as Advanced Mathematics in one of the five categories: Pre-Calculus, Calculus, Computer Science, Statistics, and Other, and may recommend additional criteria that courses should meet to be considered area C courses that would be appropriate for a fourth year of math.
2. The workgroup will examine the policy and criteria by which advanced math courses can validate (substitute for) lower-level area C math courses covering the content areas of algebra and geometry, and may recommend changes to this policy and criteria. The workgroup may specify the foundational content that must be covered or expanded upon in an advanced math course in order for it to validate a lower-level course.
3. The workgroup will specifically consider courses in data science in terms of what content they should contain to qualify as advanced mathematics for UC preparation. The workgroup will also recommend whether these courses could validate lower-level area C math courses and if so, what content would they need to contain to do so. The workgroup will consider whether it is appropriate to establish a new category of Advanced Mathematics in area C for evaluation of data science courses.

The Workgroup charge for Stage 2 to be completed by May 2024 is as follows:

The workgroup will determine UC's definition of foundational mathematics for college preparation (i.e., what do college-prep courses that address the content areas specified in Senate Regulation 424.A.3.c need to cover?). The workgroup will engage with CSU faculty and the Subcommittee on Mathematics Competencies convened by the Intersegmental Committee of the Academic Senates (ICAS) to align expectations of college preparation in math across the segments. The workgroup will examine what mathematics coursework forms the most appropriate and necessary preparation for students to be successful at the University and will propose updates to the language in Senate Regulation 424.A.3.c if necessary.

POLICY GUIDANCE ON MATHEMATICS (AREA C)

Based on the Area C Workgroup report, BOARS' policy guidance on the mathematics (area C) admissions requirement is as follows:

1. **The core math requirement is not changing.** UC's area C math admissions requirement remains the same: three years of college-preparatory mathematics is required; four years

are strongly recommended. The foundational three years of math coursework must include or integrate topics covered in elementary algebra, two- and three-dimensional geometry, and advanced algebra. This aligns with either the traditional three-course series of Algebra I-Geometry-Algebra II or the integrated three-course series of Math I-II-III.

2. **There are two types of higher math courses.** UC’s definition of “advanced mathematics” is now updated to reflect two types of higher math courses that extend beyond the foundational three-course series. One category of higher math courses may validate (substitute for) lower-level math courses if they have as prerequisites all the lower-level coursework (including Algebra II/Math III) and rely on the content of the foundational three-course series (e.g., Pre-Calculus, Advanced Placement [AP] Calculus). A second category of higher math courses are considered suitable for the recommended fourth year of high school study but will not validate lower-level math courses because they do not require *all* of the lower-level content (e.g., AP Statistics). The Area C Workgroup examined three of the most common data science courses currently offered in California high schools (Introduction to Data Science, Explorations in Data Science – Youcubed Adaptable Curriculum, and CourseKata Statistics and Data Science). They determined that these courses do not meet the criteria to be a more advanced course per Senate Regulation 428 and do not validate Algebra II or Mathematics III according to current Senate regulations. More information about math courses approved in area C will be provided by UC Undergraduate Admissions in forthcoming High School Articulation² and Counselors and Advisers³ bulletins.
3. **The recommended fourth year math course will advance students’ learning.** A broad range of courses may be suitable for the recommended fourth year of college-prep mathematics, provided that they are courses of a level of mathematical challenge appropriate for 11th and 12th grade students already familiar with the lower-level required math coursework. UC encourages the future development of innovative fourth year courses, including data science, that will advance students’ knowledge and skills in mathematics.

CONCLUSION

There are various ways to address the college-ready standards outlined in California’s Common Core Mathematics Standards and to meet UC’s area C course criteria. UC continues to urge schools to update and adapt mathematics instruction in ways that support every student’s success. The ultimate goal is for UC to align with the State’s standards in mathematics to ensure math course options that allow California students the opportunity to choose the most relevant learning path for their educational aspirations at UC or elsewhere.

² <https://hs-articulation.ucop.edu/guide/news-resources/announcements/>

³ <https://admission.universityofcalifornia.edu/counselors/connect-to-resources/counselors-and-advisers-bulletin.html>

GOVERNING BYLAWS, POLICIES, REGULATIONS, AND GUIDANCE

A-G Policy Resource Guide	High School Course Articulation Website
Senate Regulation 424.A.3.c	Specific Subject Requirements for Undergraduate Admissions – Mathematics
Senate Regulation 428	Alternate Ways to Complete Senate Regulation 424.A.3 Subject Requirements for Undergraduate Admissions
Senate Bylaw 145	Board of Admissions and Relations with Schools
Regents Policy 2102	Regents Policy on Undergraduate Admissions
Committee Charter	Academic and Student Affairs Committee
Bylaw 22.2(b)	Specific Reservations – Academic Matters

KEY TO ACRONYMS

AP	Advanced Placement
BOARS	Board of Admissions and Relations with Schools

ATTACHMENTS

Attachment 1: [BOARS' Area C Workgroup Phase 1 Report](#)

Attachment 2: [November 2023 Committee item, "Math Preparation and Undergraduate Admissions"](#)