FORM E-1-A FOR BOSTON COLLEGE DEPARTMENTS/PROGRAMS

DEPARTMENT OF MATHEMATICS
UNIVERSITY CORE
2022

1) Have formal learning outcomes been developed? What are they? (What speci c sets of skills and knowledge does the department expect students completing its Core courses to have acquired?)

   In a Core course in Mathematics, students should :
   learn the nature of mathematical inquiry: abstraction and generalization;
   understand the power of mathematical reasoning to reach conclusions with assurance;
   communicate solutions clearly and e ectively;
   study and appreciate applications of mathematics to other disciplines.

2) Where are these learning outcomes published? Be speci c. (Where are the department's expected learning outcomes for its Core courses accessible: on the web, in the catalog, or in your department handouts?)

   A statement of the department's commitment to assessing the success of our students, with descriptions of our goals, is available on the University Core website at
   https://www.bc.edu/bc-web/schools/mcas/undergraduate/core-curriculum/core-requirements.html#1_course_in_mathematics.

3) Other than GPA, what data/evidence is used to determine whether students have achieved the stated outcomes for the Core requirement? (What evidence and analytical approaches do you use to assess which of the student learning outcomes hstudent leM in

4) Who interprets the evidence? What is the process? (Who in the department is responsible for interpreting the data and making recommendations for curriculum or assignment changes if appropriate? When does this occur?)

The department's Undergraduate Committee, chaired by the Assistant Chair for Undergraduates, is charged with assessment. The committee reviews the data described in item 3 during the fall semester, with the goal of recommendations to the full department in the spring.

5) What were the assessment results and what changes have been made as a result of using this data/evidence? (What were the major assessment ndings? Have there been any recent changes to your curriculum or program? How did the assessment data contribute to those changes?

Our department assessment process has been dormant since the beginning of the pandemic, so no signi cant permanent changes were made to our core o erings this year.

In spring, Prof. Avner Ash taught a new core mathematics course, MATH1702, \The Making of the Moral Mind: Mathematics," in the Enduring Questions format of the Core Renewal program (together with Prof. Ryan Patrick Hanley in Political Science). Here is a brief course description:

The world we live in now has been profoundly shaped by mathematical theories and technological practices, for good or for evil. Our moral world is equally or more ambiguous. How did it get that way? Boston College students will work to understand this, studying the development, in the 1600s, of algebra and calculus, physical science, morality and politics, especially at the hands of some of the main thinkers who contributed fundamentally to all of these areas, especially Descartes, Pascal and Leibniz. They will bring the historical study into focus through our modern predicament.

Prof. Ash reports: \My course also brought the mathematics up to date with discussions of modern algebra and number theory. The course was partly a typical mathematics core course, with problem sets and exams, and partly a philosophy of mathematics course with class discussions and essays. There were no prerequisites for the course. I think most of the students learned a tremendous amount of di - cult mathematics, although not all of them were happy about it. They also learned how to read philosophical texts and how to think about the matters outlined in the

The department conducted a self study in the Fall of 2007, which was followed by an external review on April 24-25, 2008. We will be conducting our next self-study beginning in Fall 2022.