

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

DEPARTMENT OF MATHEMATICS
UNIVERSITY CORE
2021

- 1) Have formal learning outcomes been developed? What are they? (What specific 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 effectively;
- study and appreciate applications of mathematics to other disciplines.

- 2) Where are these learning outcomes published? Be specific. (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 have been achieved more or less well?)

The department's procedure is to collect evidence in two ways, direct and indirect.

- (1) The Undergraduate Committee will periodically review final exams in specifically identified courses and rate carefully chosen problems with regard to the learning goals.
 - (2) The Undergraduate Committee will review student evaluations for those identified courses. If possible, instructors will be asked to add extra questions, designed by the Committee, to directly address the learning goals.
- 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 findings? Have there been any recent changes to your curriculum or program? How did the assessment data contribute to those changes?)

In this unusual academic year, the department began or continued three distinct initiatives.

- (i.) Our ongoing Teaching Seminar series, coördinated by Professors Belding and Goldstein, focussed on approaches to online/hybrid teaching and student assessment. Topics included:
- integrating antiracist teaching techniques in our courses;
 - workshopping teaching techniques;
 - advising: what do you say? talking about advising;
 - panel discussion with recent Ph.Ds;
 - pros and pons of various online homework platforms.

The seminar's updated website is:

<https://sites.google.com/bc.edu/mathteachingseminar/spring-2021>.

- (ii.) As follow up, the department will conduct a summer workshop on inclusive teaching, with both graduate students and faculty participating.

- (iii.) Revision and assessment of our largest core courses, MATH1100/1 Calculus I/II, continued (*see the 2020 E-1-A*). All sections of both 1100 and 1101 became coordinated, using the same pilot curriculum. A new textbook was chosen for the multivariable material. In the summer of 2021, Professors Belding and Goldstein will review course evaluations, grades, and course survey data, and also solicit instructor feedback as they fine tune the curriculum for the future. They will also be conducting a formal investigation of multiple years of survey data related to single variable calculus students' beliefs about calculus and mathematics, reflecting on how the coördination and curriculum changes are meeting students' needs and the Core outcomes.

- 6) Date of the most recent program review. (Your latest comprehensive departmental self-study and external review.)

The department conducted a self study in the Fall of 2007, which was followed by an external review on April 24-25, 2008. The next review will take place in AY 2022.