

Form E-1-A for Boston College Core Curriculum

Department/Program: EARTH AND ENVIRONMENTAL SCIENCES

- 1) **Have formal learning outcomes for the department's Core courses been developed? What are they?** (What specific sets of skills and knowledge does the department expect students completing its Core courses to have acquired?)

EESC Core courses are designed to help students achieve the Learning Goals listed below. Although any given EESC Core course is unlikely to promote every goal on this list, our Core course faculty endeavor to promote as many of these goals as possible in each course.

1. Demonstrate an awareness of how scientific concepts and methods are employed in the study of planet Earth and its environment, and how this awareness is necessary for liberally educated people in the 21st century.
2. Demonstrate an awareness of the principles and strategies of natural science that are employed in the study of planet Earth and its environment.
3. Demonstrate an awareness of the critical role that the Earth and Environmental sciences play in contemporary society.
4. Demonstrate an awareness of the power of the scientific method in the study of planet Earth and in solving the Earth's environmental problems.
5. Demonstrate an awareness of the limitations of science in the study of planet Earth and in solving Earth's environmental problems.
6. Demonstrate an awareness of the application of mathematics and other sciences as they are used in the study of planet Earth and its environment.
7. Demonstrate how the Earth and Environmental sciences affect humans.
8. Demonstrate how humans are effecting the environment and habitability of our planet.

- 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?)

These goals are included in the description of the undergraduate curriculum on the Department of EESC website

(<https://www.bc.edu/bc-web/schools/mcas/departments/eesc/undergraduate/fulfilling-the-core-requirements.html>), in the BC catalog, and in handouts available in the Department's main office for students expressing interest in taking Core courses in Earth and Environmental Sciences.

- 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 faculty meets each spring, after classes are over, to discuss how the changes we implemented based on previous years' assessment activities have resulted in improved learning outcomes. We also discuss additional changes we would like to make based on what we have learned from the assessment process.

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 full-time faculty meets annually to review all aspects of our program, and to make recommendations to the whole department for improvement. This process is led by the Director of Undergraduate Studies. The conclusions of those discussions are reviewed by all full-time faculty, and presented in department annual reports. This year we met over winter break on January 10, 2020, as well as at the end of the year on May 21, 2020.

Other faculty meetings are held throughout the year (approximately twice per month) in which we continuously work towards gathering and interpreting data for reviewing our core program and how well our curriculum is achieving our learning goals.

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?)

The following Core Pilot Courses have been added to our Core curriculum:

- Global Implications of Climate Change (Pisani-Gareau, EESC; and Gareau, Sociology), Fall 2015, 2017, 2019
- A Perfect Moral Storm: The Science and Ethics of Climate Change (Wong, EESC; and Storey, Philosophy), Spring 2017
- Building a Habitable Planet: The Origins and Evolution of the Earth: Geoscience Perspectives (Baxter, EESC; and DeLong-Bas, Theology), Spring 2017, 2019, 2021
- Living on Water (Kineke, EESC; and Leone, Fine Arts), Fall 2017 and 2018
- Powering America (Ebel, EESC; and Valencius, History), Spring 2019, 2020, 2021

During our January 2020 meeting, faculty discussion confirmed that these core renewal courses are popular, enriching, and successful from the perspective of both professors and students. Many faculty suggested, however, that there is excessive student complaining about grades in some of our core courses. We therefore plan to further emphasize course expectations at the beginning of each term and stress that core courses are intended to be rigorous.

During our May 2020 meeting, we evaluated trends in course and enrollment statistics over the past five years. These results show that our increased teaching in core renewal has modestly decreased the total number of students as well as the number of major-level courses we teach. Our department strongly values our participation in the core renewal process because our science lends itself to rigorous, interdisciplinary inquiry. At the same time, we will be conscious of these trends as we plan our curriculum in the coming years, particularly with new faculty hires.

We also gave special attention to assessing how online teaching went this spring amidst the coronavirus pandemic. Faculty teaching core courses reported a perhaps surprising degree of success, noting how much students in these larger asynchronous courses generally liked the flexibility of prerecorded lectures. Many may therefore use Lecture Capture to record classes even

after returning to in-person lectures in the future. That said, some students seemed to have more difficulty maintaining structured engagement with these courses without regular in-class meetings and many missed the ability to ask live questions and interact with classmates.

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

Spring 2010