

## 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 will be 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?)

In May 2018, our assessment of the core curriculum focused on the Core Renewal. Faculty members Gail Kineke and Tara Pisani Gareau described their experiences teaching an Enduring Questions and a Complex Problems course (respectively) in the fall 2017 semester. Gail taught her new Living on the Water class (EESC1702). She enjoyed the opportunity to collaborate on course design with a professor in the Fine Arts Department, and found the core renewal training worthwhile. She found the motivation of the students to be excellent, perhaps higher than in a traditional core class, which might have been

because of the smaller class size and self-selection process. Her reflection sessions, including a Cape Cod fieldtrip, a guest lecture, a trip to the Isabella Stewart Gardner Museum and a visit from the Career Center, went over very well. She was also very impressed with the quality of the final projects submitted by the students. Next time, Gail said that she and her co-professor would more carefully coordinate assignment due dates. In Tara's case this was the second time her Complex Problems course, Global Implications of Climate Change (EESC1501) was offered. This time she found the consistency of having all of the lab sections taught by a single core renewal fellow to be a strength. They added a new final project on climate negotiation, which was very successful. We also briefly discussed next year's planned courses, including a second time teaching Enduring Questions courses by Gail and Ethan Baxter, and a new Complex Problems course by John Ebel. Our department strongly values our participation in the core renewal process because our science lends itself to rigorous, interdisciplinary inquiry.

**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 faculty meets annually to review all aspects of our Core course offerings, and to make recommendations to the whole department for improvement. The Director of Undergraduate Studies leads this process. The conclusions of those discussions are reviewed by all full-time faculty, and presented in department annual reports. 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 Learning Goals and how well our Core 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 and 2017
- 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 and 2019
- Living on Water (Kineke, EESC; and Leone, Fine Arts), Fall 2017 and 2018
- Powering America (Ebel, EESC; and Valencius, History), Spring 2019

During our June 2017 meeting, our overall discussion focused on how we are integrating these courses into the Geological Sciences, Environmental Geoscience and Environmental Studies major curricula. These courses are beginning to replace legacy core offerings that are no longer taught by full-time faculty.

We are still in the process of fine-tuning our Core Learning Goals and designing ways to investigate evidence that changes we have made have resulted in improved learning outcomes.

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

Spring 2010